ELECTRICAL REVIEW

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1899 1949

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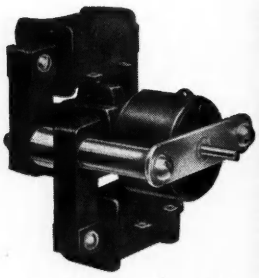
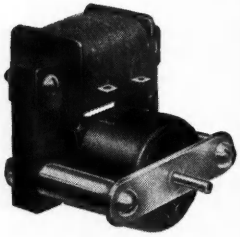


Type MBX Motor (reversible)



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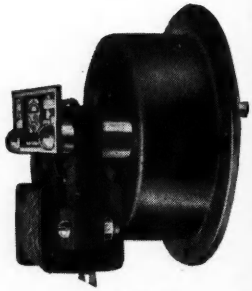

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ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER

ESTABLISHED 1872

Vol. CXLIV. No. 3719

4th MARCH, 1949

Electricity Charges

UNDERMINING PUBLIC CONFIDENCE

IN acceding to the "request" of the Minister of Fuel and Power that they should impose a winter surcharge, the British Electricity Authority and Area Boards have let themselves in for more public ill-will than they anticipated. The new authorities started work at a most inauspicious time. For years, in the face of rising costs, the price of electricity had been kept down. This, of course, had applied to other commodities, but in their case the increased cost was disguised by means of subsidies.

For electricity there was no subsidy, and only by increasing efficiency of production and by drawing upon reserves was it possible to keep finances on an even keel. Then war conditions began to have their effect upon efficiency, too; this buffer was gradually worn out and reserves disappeared, and so at Vesting Day a large number of undertakings were piling up deficiencies.

Levelling-up Process

Nationalization was held out by its advocates to be a means of improving and cheapening the service, although it has to be admitted that there was no suggestion of this in the preamble to the 1947 Act. Anyway, the public got the idea that improvement was the reason for the reorganization. One of the earliest actions of the authorities, however, was to carry out a levelling-up process in two-part tariffs, and a very large number of consumers were adversely affected. Still, the increase was justified; electricity was being sold below its cost of production and that could not continue.

Nationalization had nothing to do with it but, with the encouragement of the daily papers, everybody thought it had. In this way the B.E.A. and Boards incurred a great deal of odium which should have been borne by their predecessors.

Surcharge and Rebate

After this widespread price increase (justifiable, as we have shown), the Ministry immediately required the imposition of a winter surcharge, as recommended by the Clow Committee, which was appointed to recommend means of reducing the domestic peak demand. That Committee had to come to the obvious conclusion that there was no effective means of ensuring a more or less immediate reduction in the peak. Some system of control of equipment in consumers' premises was the only way. Nevertheless, the Committee felt no doubt that it was bound to do something and recommended that there should be an addition to the price per kWh during one of the winter quarters. This was calculated to curb the use of electricity, although not necessarily at peak hours. Normally, of course, people will use electricity during these periods even if they have to economize at other times.

This was not meant to be a revenue-raising measure, so it was suggested that consumers' accounts should be evened out by allowing a rebate in the other three quarters of the year. Forced to adopt this proposal, the B.E.A., no doubt on some sort of statistical grounds, worked on the assumption that the average total use in

the three "rebated" quarters was three-and-a-half times that in the "surcharged" quarter. Even allowing for the fact that one of these quarters may be regarded as another "winter" quarter, this theory is quite untenable. Very few consumers will succeed in achieving a balance between surcharge and rebate unless they deliberately waste electricity during the three quarters.

We feel that the B.E.A. and Boards will not repeat this strange device next winter, but in the meantime they must make some further calculations which should lead them to increase the summer rebate substantially and immediately. This may help them to regain public confidence which unwise "direction" from the Ministry is rapidly losing for them.

ELECTRICAL POWER CONVENTION

On page 360 of this issue we give preliminary particulars of the arrangements for the first British Electrical Power Convention (successor to the I.M.E.A. Convention), which is to take place at Torquay in June. It will be seen that, although the general outline is a familiar one, the scope is much wider, and the business side should be of even greater interest than before. The papers by Mr. Melling and a representative of the Electrical Contractors' Association should be complementary, as they deal with service to the public from two different aspects which sometimes merge into one another and sometimes clash. The paper by the President of the I.E.E. will presumably be a technical introduction to two supplementary papers (B.E.A.M.A. and C.M.A.) on the strictly practical aspects of high-voltage transmission. The social arrangements should help to make the Convention a memorable success worthy of continuance.

FAIR TRADING POLICY

Nationalization has raised new problems for the Electrical Fair Trading Council and for its constituent associations. The solutions propounded and mentioned in the Council's annual report, cannot please all the constituents but facts have to be faced, and the Council has at least managed to maintain the general structure of the Policy. Electricity supply authorities already enjoyed the same discounts as electrical contractors and retailers and the granting of quantity discounts to the new authorities was inevitable. Weight of purchasing power also puts other national boards and the Co-operative Wholesale Societies in a position to demand special terms. Although the small man may feel that his position is not improving, the Council is still a stabilizing influence and a safeguard against the "anarchy" from which electrical business used to suffer before this attempt was made to put it on a proper basis.

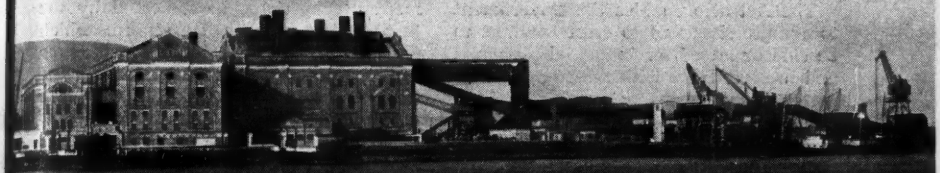
POWER STATION GROUPS

In the opinion of the Royal Fine Art Commission, whose eighth report is referred to on page 367, elaborate architecture for power stations is inadvisable. It would welcome a simple functional design which would save time, labour and material. The ancillary structures distract attention from the principal building, and it is these to which objection is usually made. The Commission thinks that the judicious use of trees would help to offset or screen the presence of chimneys, cooling towers and coal dumps. The British Electricity Authority is continuing the co-operation which the Commission received from the Electricity Commissioners and the Central Electricity Board.

E.I.B.A. 1949 TARGET

During the current year the Electrical Industries Benevolent Association is expecting that direct cash grants to its beneficiaries will amount to about £31,500 and, in addition, the running expenses of the home at Broome Park will be about £2,000—a total of £33,500. Against this the Association will receive from investments, income tax recovery, etc., more than enough to cover its social service work and other costs, but it will still need about £33,000. To enable this "target" to be achieved the Association is relying upon many more subscribers to double their aid, following the good example of the sixty or so subscribers to this good cause who were mentioned in our last issue.

Electricity in Northern Ireland



I.—HOW IT HAS MADE POSSIBLE THE ESTABLISHMENT OF NEW INDUSTRIES

AGRICULTURE, linen and shipbuilding have been, and continue to be, the major basic industries of Northern Ireland, and when a slump affected them—as occurred between the wars—the resulting unemployment in the area was most severe.

In 1932, therefore, to meet such conditions, the Government embarked upon a policy of industrial development, and the 1932, 1937, 1942 and 1944 Acts served as testing measures out of which has emerged the 1945 Act which is now in operation, and which is directed towards a triple objective:—The provision of the greatest possible measure of employment for Northern Ireland workers; the diversification of industry in order that the risk of slump may be spread instead of remaining confined to the basic industries alone; and the rural industrialization of the area in order to lessen, if not to stop, the drift of population from the country to the city of Belfast or to the Dominions and Colonies.

The Industries Development Act (Northern Ireland), 1945, drafted in the light of the dual experience of earlier legislation and of wartime industrial conditions, has proved to be well conceived and the facilities and co-operation which may be made available to interested industrialists have already resulted in the establishment—since V.E. day—of 128 undertakings, estimated to absorb 12,000 male and 10,500 female workers of whom

The Belfast Corporation's Harbour power station shown in our title picture will, by the summer of 1949 have a capacity of 144,750 kW. In the interior view below a 30,000 kW turbo-alternator set is seen in course of construction in the background; a further 30,000-kW set is on order

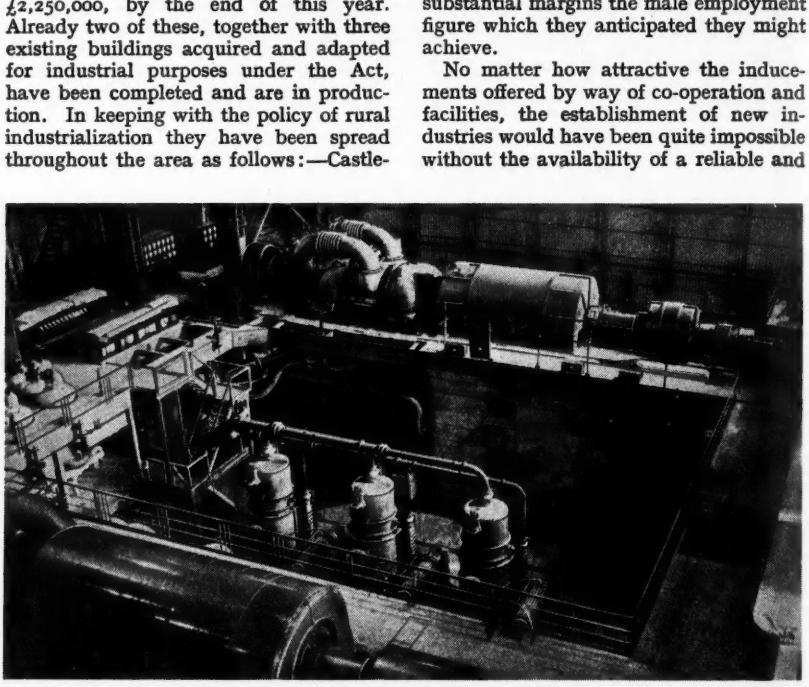
7,800 men and 5,500 women are actually in employment.

The Act also enables the Government to acquire sites and to erect factories to be sold or leased for industrial purposes, and in accordance with these powers two factory estates and a number of individual factory sites have been acquired and a programme adopted calling for the completion of 19 factories, costing about £2,250,000, by the end of this year. Already two of these, together with three existing buildings acquired and adapted for industrial purposes under the Act, have been completed and are in production. In keeping with the policy of rural industrialization they have been spread throughout the area as follows:—Castlereagh, Belfast (3); Donegall Road, Belfast (4); Falls Road, Belfast; Whitehouse, Belfast; Armagh; Banbridge; Dungannon; Enniskillen; Larne; Lisburn; Lurgan (2); Newry; Newtownards (3); and Omagh. In many cases undertakings have been established without direct financial facilities being required, and to these the greatest possible measure of co-operation has been afforded by the Ministry of Commerce.

The success which has followed the Government's policy of industrial development may perhaps be indicated by the fact that in a number of cases firms which have established undertakings in the area have extended their premises within the first year of operation and by the very gratifying feature that already almost half of the undertakings established with Government assistance have exceeded by substantial margins the male employment figure which they anticipated they might achieve.

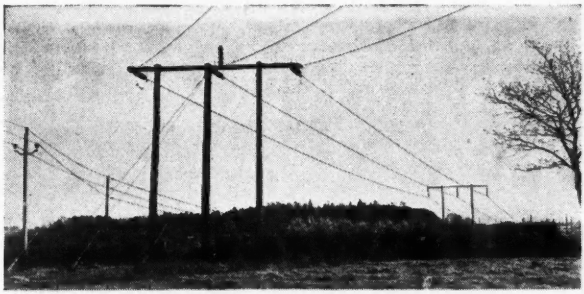
No matter how attractive the inducements offered by way of co-operation and facilities, the establishment of new industries would have been quite impossible without the availability of a reliable and reasonably priced supply of electricity. It is a tribute to the foresight of the Government and the enterprise of the electricity supply authorities that such facilities are available in all towns and villages of any size throughout Northern Ireland.

With the object of developing these facilities further the Electricity (Supply) Act (Northern Ireland), 1948, was passed last August which provides for the



The completion in December of this 31,500 kW turbo-alternator (the third unit) at Ballylumford brings the total generator capacity to 93,000 kW

establishment of the Northern Ireland Joint Electricity Committee, one of whose duties is to co-ordinate the generation of electricity and to make adequate supplies available to

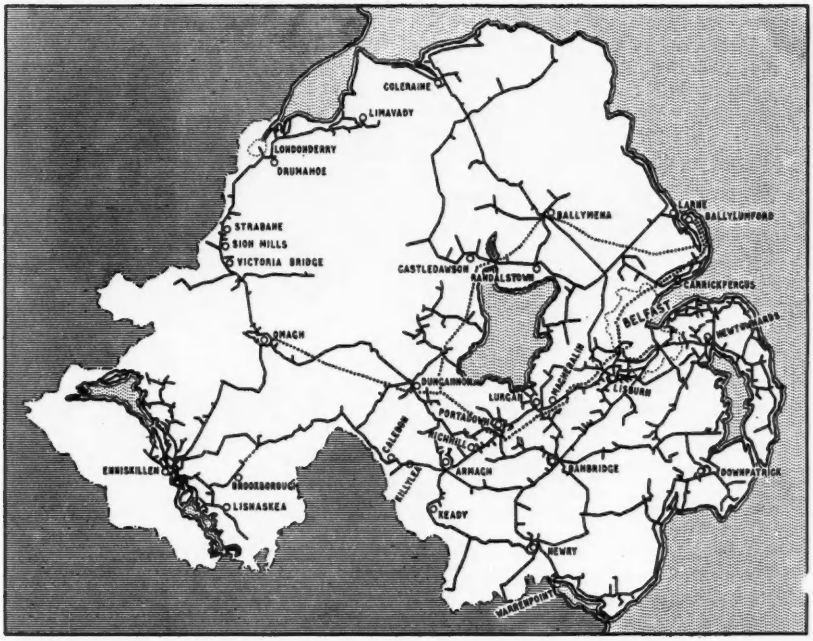


Termination of a new 110-kV line at Drumnakelly substation near Portadown

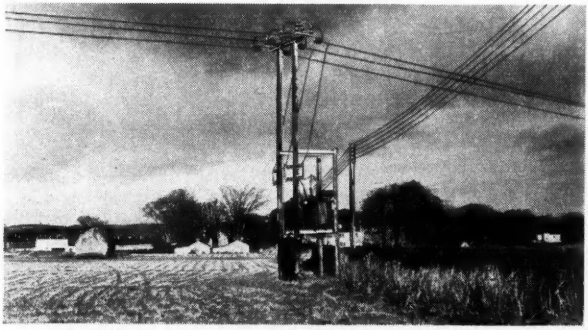
distributing undertakings. Under the Act the Ministry of Commerce is required to prepare schemes for the development of power resources and the general improvement of generation and transmission. To encourage rural electrification the Act abolishes the right of the Electricity Board for Northern Ireland to ask for guarantees in respect of rural supplies for agricultural and non-industrial purposes. Power is also given to the Ministry of Agriculture to grant loans for the purchase and installation of electrical agricultural equipment.

Planning of the generating facilities has been carried out with the object of securing that adequate supplies of electricity are available from up-to-date plant without an undue surplus of capacity. The whole of the electricity requirements of Northern Ireland are now being met by the interconnected Harbour power

Electrical transmission and distribution scheme. The partly completed 110 kV line is shown dotted



station of the Belfast Corporation, the Ballylumford station of the Electricity Board for Northern Ireland and the Londonderry Corporation station. Two small stations are also retained in operation for standby or peak-load service.



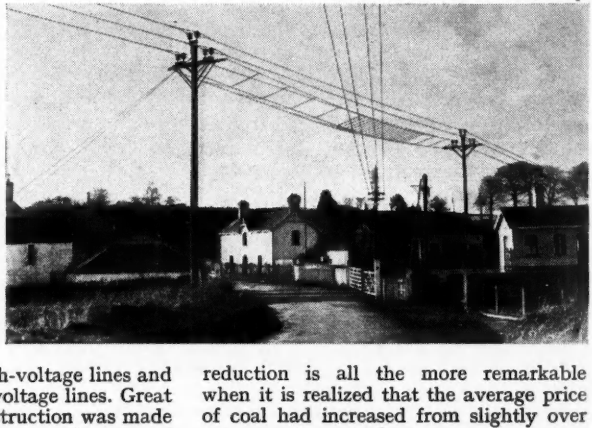
H-pole carrying transformer, fuse isolators and section switch on 33 kV line; also l.v. line

December saw the completion of a third turbo-alternator at Ballylumford, bringing the total capacity there to 93,000 kW, while plant now being installed at the Harbour power station is expected to be ready for service by next summer to bring the capacity of the latter station up to 144,750 kW. A fourth 31,500 kW turbo-alternator set with appropriate boiler capacity now being installed at Ballylumford will bring the capacity of that station up to 124,500 kW, and a further 30,000 kW of generating and steam-raising plant at the Harbour power station is on order.

The Electricity Board, whose activities cover the whole of the 5,244 sq miles of the Province outside the areas of the Belfast and Londonderry undertakings, now operates more than 1,400 miles of high-voltage lines and over 900 miles of low-voltage lines. Great progress with new construction was made during 1948, but the acute shortage of all line materials has been most embarrassing to the Board. To strengthen the transmission network a 110 kV ring main is to be constructed from Ballylumford to Ballymena and from Ballymena to Drumnakelly near Portadown, with a feed to Omagh.

During 1947 and 1948 ten statutory undertakings, including those of the Antrim Companies, were acquired by the Board, together with 20,540 consumers. At the end of 1948 the Board had a total of 83,066 consumers, of whom 524 were industrial users, accounting for approximately 40 per cent of the electricity sold.

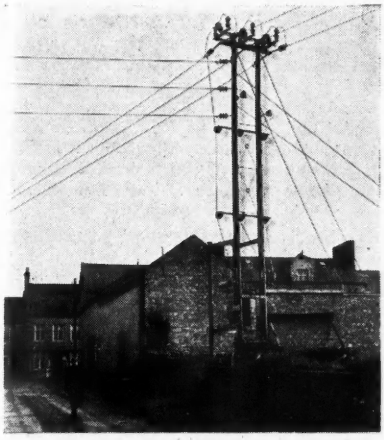
In 1947 the aggregate maximum demands on the power stations exceeded 60,500 kVA and the kWh sold exceeded 140 million at a net average price of 1.48d per kWh as against the 1938 sale of 42 million kWh at a net average price of 1.53d per kWh—a ten-year sales increase of 233 per cent with a net average price decrease of 3.27 per cent. This price reduction is all the more remarkable when it is realized that the average price of coal had increased from slightly over 22s a ton to more than 50s a ton.



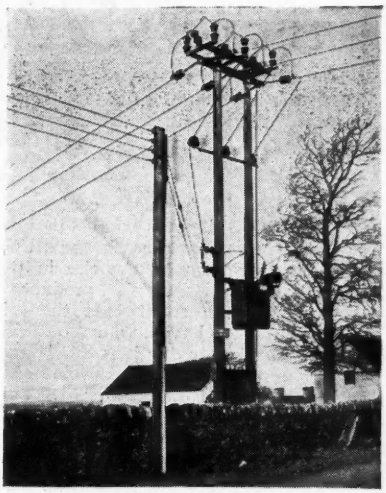
33 kV line with cradle guard and duplicate insulators over the railway at Victoria Bridge

In the 82.7 sq miles served by the Belfast Corporation a similar policy of expansion has been followed. The already comprehensive distribution network continues to be augmented, 10 miles of h.v. and 50 miles of l.v. lines having been provided in 1947-48, thus bringing the totals to 310 miles and 945 miles respectively. The number of consumers rose from 96,956 to 102,748, of whom 3,520 took supplies under industrial tariffs, compared with 3,373 in 1946-47. Altogether 427 million kWh was sold in 1947-48, 24 million more than in the previous year. Industrial consumers took 118 million kWh in 1947-48 as compared with 111 million kWh in 1946-47.

Charges for electricity compare very favourably with those in Great Britain. For the principal industrial tariffs, systems involving maximum demand are largely employed. In Belfast an initial charge is made per kWh for that part of the consumption which is equivalent to the maximum demand for 91 hours per quarter and 0.27d per kWh thereafter. The initial kWh charges range from 4.3d (5d for d.c.) for up to 10 kW m.d. to 2.3d for over 1,000 kW. An alternative flat rate of 2½d per kWh is offered, while for restricted-hour supplies the charge is ¾d, or, if for night power purposes only, 0.6d. Restricted-hour standby supplies are available at 1¼d. All tariffs are subject to a coal clause charge of 0.011d for each shilling by which the price of coal exceeds a basic figure, which is 15s in the case of power tariffs and 21s 10d in the case of all others. There is a discount of 10 per cent for prompt payment.



Four-pole structure carrying 33 kV line with section switch, tee-off, fuse isolators and 100 kVA transformer at Caledon



H-pole carrying 50 kVA transformer and section switch at Killylea

A single system of tariffs applies throughout the area of the Electricity Board. For industrial power of 2 h.p. or over there is a kWh charge of 0.3d plus a monthly charge per kVA of maximum demand ranging from 11s for up to 25 kVA to 6s for over 400 kVA. As an alternative there is a block tariff ranging from 2d per kWh for the first 200 kWh per month to 0.55d for over 80,000 kWh. Where the estimated m.d. exceeds 10 kVA there is an annual standby charge of 25s for any monthly demand recorded in excess of that obtained by dividing the kWh consumed in any year by 1,000. Rebates are given of 5 per cent for power-factor correction and 30 per cent for night use only. The Electricity Board tariffs mentioned are subject to a coal clause based on 0.011d per kWh per 1s increase in the cost of coal over 25s a ton.

In subsequent issues we shall refer to some of the diverse new industries which the availability of electricity has made possible.

Views on the News

By REFLECTOR

JUST after learning of a further increase in the price of British coal I picked up the *Electrical World* (New York) and found in it an article headed "Trend of Coal Prices is Downward." Why, I wondered, should American coal prices be going down while ours are still moving upward? The reasons given in the article were that there has been a rise in the American coal industry's productive capacity with the result that there is sufficient excess to have an effect on price levels; and that reductions in labour costs are expected from the development and installation of new equipment. This fact will benefit electrical utilities with their enormous coal consumption.

★ ★ ★

Number Two of the staff magazine of the North-Western Electricity Board bears the title "Areatopics"—chosen from about 300 suggestions. "Contact" was again the favourite entry, but both this and "Current Topics" have already been booked by others. There were, of course, the usual funny ones, e.g., "Watt's Watt" and "Ohm News." The magazine is brightly produced and wisely confines itself to domestic and area matters.

★ ★ ★

There are many strange complications in the application of the electricity surcharge. Slot-meter consumers do not pay it, nor do those with a summer-winter differential rate. Nor do the Weymouth consumers apparently, for an official of the Southern Electricity Board told the local Fuel Economy Committee recently that any tariff increase in the district was subject to six months' notice and this could not be given in time. It seems also that the Weymouth people have secured for the same reason a respite until April from the rise in the secondary charge of the two-part tariff.

★ ★ ★

The surcharge does not bother a group of "squatters" at a camp near Paisley. About two years ago an all-in weekly payment of 7s 6d was instituted to cover rent, rates and electric light. The residents so appreciated electricity that at first the average cost was 4s 1d a week, and later it went up to 7s 3d. Paisley Corporation then raised the weekly payment to 10s, but the squatters' appetite for electricity increased at a greater rate until the value of consumption rose to 11s 4d a week. Prepayment meters are now suggested.

★ ★ ★

British consumers are now being fined all the time for using electricity during one of the winter quarters. They order these things better in France, where fines are imposed only for using appliances during certain hours. A Paris correspondent tells me that during January these fines totalled 55 million francs, which sounds terrific until it is remembered that the franc is now worth only a farthing. He tells me that the restrictions were being removed on 1st March; this will relieve the sellers of appliances who have suffered considerably.

★ ★ ★

I hear from the General Electric Co., Ltd., that they have helped to make "The Perfect Woman." To save the company from being flooded with matrimonial offers, I hasten to explain that this is a Two Cities film being made at Denham Studios. The G.E.C.'s part was to provide a 200,000V spark which (for some reason or other) leaps from the woman to a bystander. The Research Laboratories did this with a radio-frequency valve oscillator in conjunction with a Tesla coil.

★ ★ ★

Demonstrators of electric cooking always stress the importance of making use of the residual heat in ovens and hotplates, but this is not always possible. A correspondent to the *Derby Evening Telegraph* says, in fact, that it is all "poppycock." When he gets up for work he wants a cup of tea. He agrees that when he has boiled the water there is sufficient heat left in the hotplate to cook a rice pudding but at 6.30 a.m. he doesn't want a rice pudding. I admit that it is a revolting thought, but he should try an electric kettle.

Switch-proving Tests

SMALL OIL VOLUME REYROLLE 132kV CIRCUIT BREAKERS

FORMAL acceptance tests to prove the rating of switchgear in accordance with BS. 116 (Part 2) 1937, were applied last week in the British Short Circuit Testing Station at Hebburn-on-Tyne to one of the three-phase 600 A at 132 kV circuit breakers of small oil content which are to be installed at the Braehead power station in the South West Scotland Division.

The breaking capacity of this class OS.10/XI/PO unit is equivalent to 2,500 MVA. It is fitted with the T. 214 turbulator and the operating air pressure is 150 lb/sq in, maximum. Test duty cycles (five B-3-B-3-B and one M-3-M) were performed at 0.3 max. power factor as follows:—

No. 1 at 10 per cent rating, breaking 1.09 kA with 125 kV recovery voltage and 132 kV transformer connection.

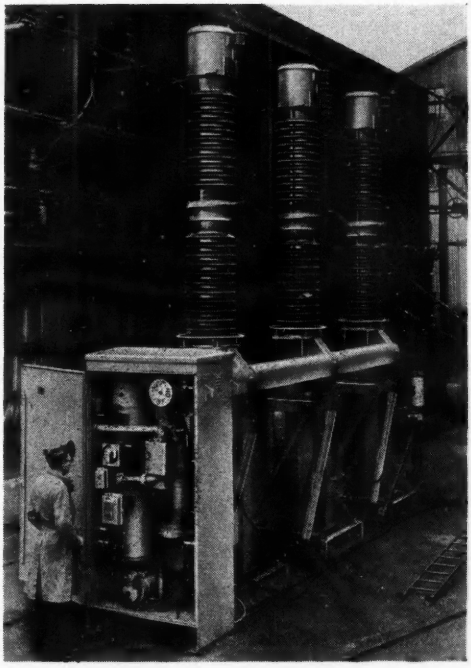
No. 2 at 30 per cent rating, breaking 3.27 kA with 115 kV recovery and 132 kV connection.

No. 3 at 60 per cent rating, breaking 6.54 kA with 45 kV recovery and 66 kV connection.

No. 4 (a) at 100 per cent rating (M-3-M), making 27.8 kA peak with 38 kV test voltage and 140 lb/sq in minimum operating air pressure.

No. 4 (b) at 100 per cent symmetrical rating, breaking 10.9 kA with 35 kV recovery and 38 kV connection.

No. 5 at 100 per cent asymmetrical rating, breaking 13.6 kA with 35 kV recovery and 38 kV connection.



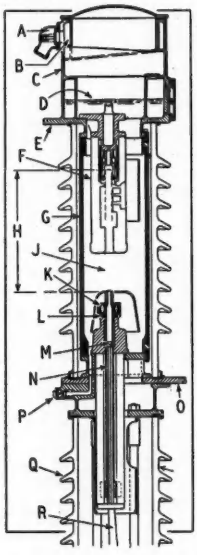
Three-phase circuit breaker of small oil volume set up for 2,500 MVA at 132 kV proving tests at Hebburn

Experience of the turbulator in breakers of normal oil volume has helped A. Reyrolle & Co., Ltd., to produce the single-break class OS open type containing little oil. The constructional principles are the same throughout the range, except that those of 750 and 1,500 MVA for 33 kV and of 500-750-1,500-2,500 MVA for 66 kV (all 800 A normal rating) will be spring operated, whereas the 600 A size of 1,500 and 2,500 MVA for 110 and 132 kV are spring opened and pneumatically closed, with simultaneous charging of the opening spring. Tripping does not depend upon the availability of compressed air. The chief differences for various voltages are dimensional and in respect of turbulator design.

Each three-phase breaker consists of three identical single-phase elements operated by a common interphase shaft passing horizontally through the metal base chambers, three in line, engaging with insulating links that vertically actuate the moving contacts. The lower

porcelain insulator, which provides electrical clearance to earth, supports the upper compartment containing the contacts and turbulator.

The last mentioned is inside a bakelized-paper enclosure containing the arc-extinguishing oil, which is physically separated from the insulating oil in the annular space between the paper cylinder and the outside porcelain shroud. So carbonized oil does not come into contact with insulation that is under permanent electrical stress to earth. The two porcelains are identical and interchangeable. The metal junction between them and the top metal cap are the external circuit terminals. They are connected to upper and lower fixed contact fingers, between which travels the moving contact.



Cross-section of single-phase element showing contents of porcelain shrouds

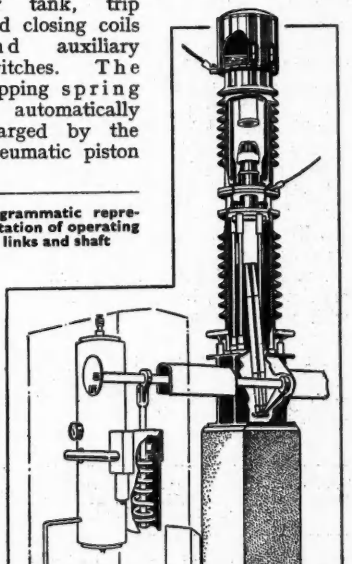
A=gas vent valve, B=oil baffle, C=metal top cap, D=oil level, E=terminal, F=turbulator with upper fixed contact in head, G=bakelized-paper enclosure, H=travel of moving contact, J=circuit breaking chamber, K=lower fixed contact, L=oil seal, M=oil injection piston and oil seal, N=moving contact stem, O=line terminal, P=drain valve, Q=supporting porcelain insulator, R=operating links

This is a metal tube of slightly smaller diameter than the throat entry of the arc-controlling device. It closes circuit by rising into engagement with the upper fixed contact in the head of the turbulator. Opening circuit by descending movement causes an internal fixed piston to force oil out of the receding tube into the turbulator. The purpose of this oil injection is twofold; first, it partly balances pressure (that generated inside the turbulator has little effect on the acceleration of the contact) so that a controlled uniform opening speed is maintained at all currents and it controls the amount of cavitation (as the contact withdraws) so quickening arc extinction.

The arc-controlling device is the Reyrolle block (plate) turbulator, built up of thick fibre "washers" in some of which are iron inserts which magnetically bias the arc towards the vent slots as the moving contact recedes axially. The lower fixed contact is a sleeve through which the moving contact tube slides. Renewable copper-tungsten tips are fitted to the moving contact and to projecting extensions of two of the upper fixed contact fingers.

The metal top cap contains a silica gel breather and centrifugal oil separator to ensure that vapour only is ejected through the pressure discharge vent, while the domed top cover is designed as a safety diaphragm. With suitable equipment, it is safe to water-hose the porcelains while the gear is alive.

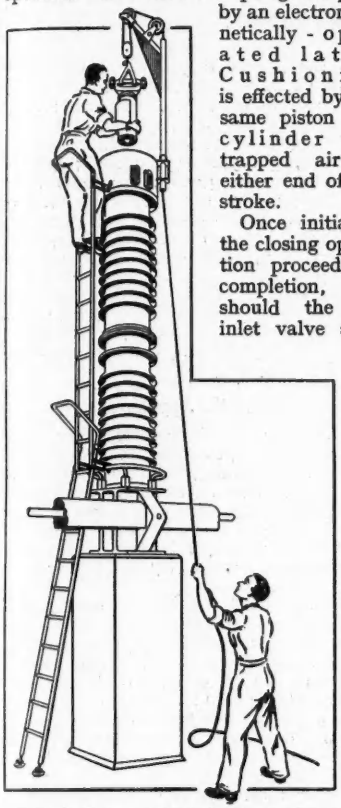
The operating gear is contained in a weatherproof welded steel cubicle, together with the motor driven compressor, air tank, trip and closing coils and auxiliary switches. The tripping spring is automatically charged by the pneumatic piston



Diagrammatic representation of operating links and shaft

and cylinder used for closing the breaker. Closing air is admitted by a solenoid-operated valve while the spring is tripped by an electromagnetically - operated latch. Cushioning is effected by the same piston and cylinder with trapped air at either end of the stroke.

Once initiated, the closing operation proceeds to completion, but should the air inlet valve stick



Method of extracting turbulator and contacts for maintenance

then the breaker will trip and remain open. The addition of suitable relays will permit of automatic reclosing with not more than 12 to 15 cycles dead time.

Service experience has shown that the automatic isolator originally provided as an integral part of earlier breakers of this type is not essential. If they must be left open and alive for periods longer than the normal, they can be disconnected from the live line by means of the associated busbar and line isolators. This type of breaker was designed for outdoor service, but is now being increasingly installed indoors.

Batti-Wallahs' Society

COMMANDER J. G. D. Ouvry, D.S.O., R.N., who performed the hazardous task of opening up the first magnetic mine, was the chief guest at last week's luncheon of the Batti-Wallahs' Society.

Commander Ouvry, who is an authority on sea mining, gave an absorbing account of the development of mines from the early contact boiler type first introduced in the 1914-18 war, to the intricate mechanism of the magnetic and acoustic mines used in the last war, and the methods adopted to counter their effect.

Among the measures adopted he mentioned the metal loop fitted to low-flying aircraft, the fitting of ships with a "degaussing" girdle, and the "Double L" system of electric sweeping. He revealed that the Germans had built up a stock of 5,000 unsweepable mines, which were kept specially in reserve against the invasion of Europe. These, however, were withdrawn just before the invasion for the renewal of certain parts, and the last was withdrawn only two days before "D" day, indicating how well the secret of the preparations had been kept.

Mr. T. W. Woolley, the "Mate," announced that the annual general meeting of the Society will be held on 14th March at the Waldorf Hotel, W.C.2, and will be followed by a reunion of members.

Street Lighting Improvements

A PROPOSAL to install mercury discharge lighting in the main street of Stafford from the Grapes Hotel to the Gaol Square at an estimated cost of £14,160 was approved by the Town Council last week. Half the cost, it was stated, was expected to be met by the Ministry of Transport.

Sodium street lighting is to be installed in Narborough Road, Leicester, during the next few months.

Reading Corporation has received the consent of the Ministry of Health to the borrowing of £3,710 for street lighting in Shirley Avenue, Barnsdale Road, Windermere Road, and Mayfair, Tilehurst, and on the Whitley housing estate.

The Ministry of Transport has approved the acceptance of tenders for improved lighting (sodium lamps) in Ipswich Road, Colchester (trunk road section).

The estimated cost of a scheme to light main roads by electricity at Kidderminster is £7,065.

It is proposed to experiment with sodium lighting in the main streets of Bexley, Kent.

Electrical Production

INFORMATION FROM 1946 CENSUS

PRELIMINARY reports based on the 1946 Partial Census of Production have already covered electric wires and cables, batteries and accumulators, lighting fittings and accessories, and radio and telecommunications equipment. Statistics for the electrical engineering (general) trade appear in the *Board of Trade Journal* of 26th February. They concern the production of all kinds of electrical machinery, transformers, and switchgear; electrical equipment for motor vehicles; and miscellaneous goods, including cooking, heating and domestic appliances, meters and instruments, cable accessories, insulating materials, electro-medical apparatus and other classes, as well as contract work.

The figures cover 4½ pages of the *Journal* and are not easily susceptible to summarization. A general summary is contained in the following table:—

GENERAL SUMMARY OF PRODUCTION & EMPLOYMENT

	1946 £'000	1937 £'000	1935 £'000
Value of production (gross output) ...	158,590	74,657	55,533
Materials, fuel and electricity used ...	62,665	32,869	23,095
Amount paid for work given out ...	1,701	212	143
Net output ...	94,224	41,576	32,295
Average no. of persons employed	246,827	176,497	148,232
	£	£	£
Net output per person employed ...	382	236	218

It is possible only to select a few items from the long table showing the sales of the principal products. For instance, the number of alternators sold in 1946 (with their value in parentheses) was as follows:—Not exceeding 50 kVA, 3,129 (£308,000); 51-300 kVA, 828 (£285,000); 301-1,000 kVA, 141 (£211,000); 1,001-5,000 kVA, 74 (£455,000); 5,001-10,000 kVA, thirteen (£172,000); 10,001-30,000 kVA, twenty (£425,000); over 30,000 kVA, thirteen (£517,000). As regards d.c. generators, the bulk (15,143, valued at £881,000) were 50 kW or under; 703 machines between 51 and 300 kW, valued at £388,000, were sold.

As regards non-traction motors, the greatest number of the machines were of fractional horse-powers. A.c. machines rated up to ½ h.p. numbered 377,616 (value, £1,473,000), and d.c. and "universal" machines 229,808 (£757,000). Motors above ½ h.p. and under 1 h.p. numbered: a.c., 104,788 (£738,000), d.c., 15,655 (£273,000). Sales of larger motors were as follows: A.c.—1-50 h.p., 322,552 (£5,349,000); 51-300 h.p., 4,562 (£1,013,000); 301-1,000 h.p., 768 (£565,000); over 1,000 h.p., 33 (£249,000). D.c.—1-50 h.p., 29,459 (£1,907,000); 51-300 h.p., 637 (£381,000); 301-1,000 h.p., 31 (£70,000); 1,001-5,000, 19 (£141,000).

Power transformers of less than 800 kVA numbered 53,467 (value, £3,535,000); 801-5,000 kVA, 581 (£857,000); 5,001-30,000 kVA, 141 (£1,100,000); over 30,000 kVA, 13 (£282,000).

Domestic Appliances

Of domestic electric cookers under 3kW, 172,000 were sold, their value being given as £311,000. Cookers of 3 kW or more numbered 161,000 (£2,680,000). Parts and accessories of cookers to the value of £1,088,000 were sold. The sale of portable domestic fires is shown as 1,579,000, valued at £2,183,000, and domestic water-heaters as 572,000 (£1,499,000).

The value of sales of domestic cookers and fires and parts "not separately distinguished" is put at £634,000. Other domestic appliance sales were: irons, 1,899,000 (£1,636,000); wash boilers, 173,000 (£784,000); vacuum cleaners, 607,000 (£5,313,000 and parts £633,000). Sales of house-service meters are given as 121,000 prepayment (£600,000) and 969 other (£2,301,000).

Another table sets out exports and imports, statistics which have already been published, and a further one shows materials, fuel and electricity purchased and used. No particulars are given of "privately-generated" power, but the purchase of electricity is given as 384.2 million kWh at a cost of £1,523,000.

The last table is devoted to employment, wages and salaries. It shows that a total of 246,715 men and women of all ages were employed in the industry in 1946 (against 176,497 in 1937). Their total remuneration was £63,978,000; no figure is given for 1937. These included 188,291 operatives (against 135,286 in 1937), whose wages amounted to £44,370,000; and 58,424, excluding 112 working proprietors, on the administrative, technical and clerical staff (against 41,211), with salaries totalling £19,608,000.

Correspondence

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for the opinions expressed by correspondents

Surcharge-Rebate

I HAVE just received my quarterly account for electricity and find that, although I have used 1,165 units less than in the corresponding quarter of a year ago, my 0.35d per unit surcharges for this winter's quarter are double the amount I shall save in the corresponding three quarters of the coming year, which will be charged at 0.65d instead of 0.75d.

Last quarter I used 7,270 units, against 8,435 in the corresponding period of last year. The surcharge is therefore £10 12s. In the remaining three quarters of last year I used 12,741 units; upon the same consumption this year's rebate will be £5 6s 2d. Thus I shall be £5 5s 10d out of pocket.

All engineers knew that this would operate unfavourably for the consumer, but the politicians seemed to believe it would strike a balance. I wonder if anyone can produce figures to prove that the politicians could have been right?

Leicester. B. GILL.

Submersible Motors

MR. J. GRIFFIN (25th February) still cannot grasp what I have written, but very often the indigestible becomes digestible if taken in small doses, so I offer the following comments:—

If your correspondent will re-read my letters, he will find that in both cases I have only re-stated the well-known fact that losses which occur in electrical apparatus are supplied by a current in phase with the supply. If the current is in phase, then the power factor must be increased. The tube losses in the stainless steel tube must therefore be in phase with the supply and so they must increase the power factor.

In neither of my letters have I stated by how much the power factor is increased by these additional losses, but, nevertheless, the fact still remains that the tube losses must increase the power factor and *not* reduce it as stated by the author of the article on "Submersible Motors" (24th December, 1948, page 984, paragraph 3).

Mr. Griffin continues his letter by asking me to give him details of all the other losses which occur in submersible motors, but inasmuch as he has misunderstood my simple statement on power factor and tube losses, I shudder to think of the volume of correspondence that could pass between us on such a complex subject. As such a detailed analysis is irrelevant to the point on which he originally took me to task, it must be sufficient for the time being for me to assure him that the eddy losses in the tube do not appreciably affect the efficiency and that by virtue of the fact that they are losses (big or small) they must increase and *not* reduce the power factor.

T. E. PENLINGTON,
Graduate I.E.E.

Sutton Coldfield.

(This correspondence is now closed.—Editors, ELECTRICAL REVIEW.)

Manufacturers' Price Lists

MANY manufacturers issue recently printed lists carrying 1939 prices, to which must be added subsequent increases.

I have before me a leaflet illustrating an adaptor being marketed for the first time and to the printed price of 5s 6d must be added 55 per cent. Is there any reason why these calculations are left to the purchaser?

Other things being equal, a wholesaler or retailer offers goods covered by a current price list in preference to those for which a calculator is necessary before a price can be quoted.

Harrow. E. H. MALTBY.

Is Compulsion Necessary?

I DO not agree with "Disappointed" that electricians, not contractors, should be made to "toe the line." Surely "Disappointed" is not suggesting that electricians should be in a position to educate their employers as that would be an invidious state of affairs. I entirely agree with "Ubique" who states "Let compulsory registration be enforced by an independent authority with no other concern than that of safe installations."

Contractors get evidence every day to prove that some sort of action is necessary. As an example I may refer to three joints in main cables feeding a large factory which I have come across. These

mains were 37/0.072 lead-covered cables to which was tapped 19/0.052 v.i.r., the joints being insulated (?) with two layers of empire tape.

So far as compulsory registration is concerned, I am afraid we have about as much chance of obtaining that necessary reform as we have in getting five shillings in the pound off our income tax. It seems to me that, apart from a comparative handful of reputable contractors, the majority in the installation industry have shown little or no enthusiasm for compulsory registration.

Glasgow. ALEX. MILNE, SENR.

Revised Export Targets

ON 26th October last Mr. Harold Wilson, President of the Board of Trade, announced the end-1949 export targets for United Kingdom industry. These have now been slightly revised. In the case of electrical goods and apparatus the target is now put at a monthly rate of £7.50 million in value compared with the provisional target of £7.55 million, an end-1948 target of £7.07 million and a December, 1948, performance of £6.49 million. By volume the revised target is 265 per cent of the 1938 figure compares with 270 per cent for the provisional target and 252 per cent for the end-1938 target.

The revised targets for the individual items covered, in £ million monthly rates (with the 1948 target in parentheses) are as follows: Wires and cables 2.20 (1.95), wireless apparatus and radar 1.32 (1.20), telephone and telegraph apparatus 1.40 (1.25), electric lighting apparatus 0.70 (0.82), batteries and accumulators 0.38 (0.42), electro-medical apparatus 0.05, X-ray apparatus, etc., 0.12 and other products 1.33 (1.43, including electro-medical and X-ray apparatus). In the machinery section the target for electrical machinery is 2.85 (2.40), that for vacuum cleaners and other portable electrical appliances 0.24 (0.37), and that for refrigerating machinery 0.45 (0.27).

Radio Components Exhibition

THE sixth annual private exhibition of the Radio Component Manufacturers' Federation, held from Tuesday until Thursday this week at Grosvenor House in London, demonstrated the skill of British technicians in the design and manufacture of components for the radio and allied electrical industries.

Almost every advance in radio, radar and electronics depends upon the ability of the component manufacturer to meet some new exacting requirement and the exhibition this year, at which no less than 106 firms were represented, gave a clear indication of what has been done to bring about smaller radio receivers, brighter television pictures, more reliable navigational aids for ships and aircraft, and communications and broadcasting equipment which will operate satisfactorily under all climatic conditions.

The exhibition was opened by Mr. A. G. Bottomley, Secretary for Overseas Trade, and the guests at the inaugural luncheon included Mr. Harold Wilson, President of the Board of Trade, and Mr. G. R. Strauss, Minister of Supply. The exhibits ranged from the miniature components used in airborne radio equipment and hearing aids, to the apparatus needed for high-powered broadcast transmitters. Other exhibits of interest were test equipments designed for special purposes, magnetic materials, miniature mouldings and castings, metallized ceramic and glass for hermetically sealing components and, for the first time, valves, including the new miniature types for use in television and frequency modulation receivers.

"Waste" Charge Dismissed

THE *Manchester Guardian* reported a case at Sunderland this week in which a man was summoned for leaving a thermostatically controlled electric convector in a shop on all night, on the ground that he was wasting fuel. The defendant contended that electrical engineers had proved by tests that a one-kilowatt heater burning overnight effected a saving of one-seventh in the overall amount of current necessary to heat a shop to a temperature of 48 degrees, because, if the premises were allowed to go cold during the night, it would require seven kilowatts to restore that temperature.

He said that there were tens of thousands of traders like himself using this and similar types of heating and he did not think they should be penalized for heating a shop on a very small basis at a time when the electricity load was low—and saving current as well. The summons was dismissed.

Board's Radio Sales

ALDERMAN W. LEWIS, Chairman of the Midlands Electricity Board, stated last Monday that the Board intended to expand the business of supplying and servicing radio and television sets which was already being carried on by some of the undertakings which the Board had acquired. When the scheme was complete sets would be on sale at over a hundred service centres in the area. The *Manchester Guardian* says it is understood that the decision has been accelerated by the early provision of a television service in the Birmingham area.

PERSONAL and SOCIAL

News of Men and Women of the Industry

THE British Electricity Authority has appointed **Mr. H. R. Schofield,** transmission engineer, North Western Division, as transmission construction engineer of the Authority in succession to **Mr. J. Andrew Lee,** who relinquished the post at the end of February. Mr. Schofield held appointments with the Stalybridge, Hyde, Mossley and Dukinfield Tramways and Electricity Board and the Pirelli General Cable Works before joining the Central Electricity Board in 1930 as acting frequency change engineer in the North West England and North Wales Area.

He later became assistant transmission engineer in that area and since 1932 he has held the post of transmission engineer, first for the C.E.B. Area and, since vesting day, for the B.E.A. Division. He is an associate of the I.E.E.

On relinquishing his duties Mr. Lee received a parting gift from his staff colleagues. Mr. Lee's choice of gift took the form of a Myford engineer's bench lathe, the specification of which, in token, was handed to him at an informal ceremony by Sir John Hacking, deputy chairman (operations) of the B.E.A.

Mr. C. R. Heathcock, president of the Chartered Institute of Secretaries and a part-time member of the Midlands Electricity Board, left England on 19th Feb. on a month's goodwill tour of South Africa, with the Institute's secretary, Dr. A. M. Allen. Mr. Heathcock proposes to return to England in April.

Mr. H. L. Satchell, M.B.E., manager of the B.T.H. Rugby Works and its associated factories at Peterborough, Leicester (Blackbird Road) and Nelson (Lancs), who, as we reported in our last issue, has been appointed a director of the British Thomson - Houston Co., Ltd., was educated at Lawrence Sheriff School and Rugby School. After service in the 1914-18 war, he was accepted for apprenticeship with the B.T.H. Co., and was awarded a fellowship in 1921. He proceeded to the General Electric Co., U.S.A., for one year, and on his return to Rugby in 1922 became technical assistant to the head of the Winding Department. In 1929 he was appointed planning engineer, in 1940 assistant manager and in 1945 manager, Rugby Works. He is a founder member of the British Works Management Association, which is now absorbed in the Institution of Works Managers.

Mr. H. L. Satchell

Mr. N. T. Smith, No. 2 sub-area manager for the Merseyside and North Wales Electricity Board, has been appointed general manager of the Nova Scotia Electric Light & Power Co. He will leave this country for Canada in May and will supervise the company's undertakings in Nova Scotia in an area 300 miles long and 75 miles wide. The company operates thirteen hydro-electric stations. Mr. Smith, who has held his appointment with the Merseyside and North Wales Electricity Board since March of last year, became the first county electrical engineer to the newly formed Electricity Department of the Kirkcudbrightshire County Council in 1933, and three years later was appointed borough electrical engineer at South Shields. From 1939 to vesting date he was borough electrical engineer at Warrington.

Mr. N. T. Smith

Alderman W. E. Sowter, M.B.E., for twenty-four years chairman of the Bedford Electricity Committee and for a long time a member of the I.M.E.A. Council, has retired from the Bedford Town Council "to give way to a younger man."

Mr. D. J. Crabbe, chief engineer at Dunlop's Speke factory, has accepted an invitation from the Minister of Fuel and Power to serve as a member of the Merseyside and North Wales Electricity Consultative Council.

Mr. J. Dobson has been appointed district engineer for the Yorkshire Electricity Board at Skipton. Mr. Dobson, who is a native of Bradford, was with the Yorkshire Electric Power Co. in Airedale for about twenty years before nationalization.

Mr. A. Hastie, M.Inst.T., previously transport and coal officer with Edmundsons Electricity Corporation, Ltd., has been appointed transport officer in the Revenue Purchasing Department of the B.E.A.'s headquarters in London. In his new post Mr. Hastie will be mainly concerned with

the co-ordination of the transport problems in connection with bulk supply of fuel to power stations.

Air Vice-Marshal R. S. Aitken, C.B., O.B.E., M.C., A.F.C. M.(Brit.)I.R.E., a director of Radio and Television Trust, Ltd., and Airmec Laboratories, Ltd., has been elected president of the Radar Association for the current year.

Air Vice-Marshal R. S. Aitken

A most successful dinner-dance was held by the Maidstone and Tunbridge Wells branch of the Electrical Contractors' Association on 17th February, and the proceeds, £150, were handed over to the Electrical Industries' Benevolent Association. The success of the event was very considerably the result of the efforts of **Mr. P. G. Wallis.**

Mr. W. E. B. Nettleton has been appointed engineer of No. 3 Sub-Area (Sheffield) of the Yorkshire Electricity Board. The appointment will take effect from 1st April when **Mr. A. Haddock,** the present engineer, will succeed **Mr. J. R. Struthers,** who is retiring as Sub-Area manager. Mr. Nettleton is at present senior assistant engineer of the Sub-Area, and before joining the Sheffield undertaking in 1938 was with the Salford Corporation Electricity Department.

Mr. A. G. Beverstock has resigned from the academic staff of Bristol University and has been appointed chief education officer to the Southern Electricity Board at Maidenhead.

Mr. C. H. Davis, of the Reliance Electrical Wire Co., Ltd., has joined the Exhibitions Advisory Committee, the standing committee which is to advise the Board of Trade on exhibition policy.

On 18th February, at the Connaught Rooms, the London Branch of the **Purchasing Officers' Association** held its annual dinner-dance, which was attended by 250 members with their ladies and guests. The toast of "The Association" was proposed by Mr. H. C. Mills (managing director, the Morgan Crucible Co., Ltd.).

On 26th January the staff party of the Leyton Works of the **London Electric Wire Company and Smiths, Ltd.,** was held in the dining hall of the Leyton Works. **Mr. Klein,** general manager, on behalf of the staff, thanked Mr. W. J. Terry (chairman) for affording the opportunity for such a social gathering. The evening's programme was varied by entertainment and dancing, a high light of which was an all-male ballet composed entirely of members of the office staff.

British Insulated Callender's Cables, Ltd., held a dinner and dance for the London and Southern Counties staff at the Lyceum, Wellington Street, London, on 24th February. Over 1,000 members attended. Sir Alexander Roger welcomed the guests on behalf of the directors, and Mr. B. A. Maxted, of the Home Sales Department, replied. Music was provided by two dance bands and a cabaret show was included in the evening's entertainment.

The **Bradford and District Electricity Recreation Club,** comprising members of staff of the Yorkshire Electricity Board and Yorkshire Division, B.E.A., recently gave three performances of "Babes in the Wood." The chairman and deputy chairman of the Yorkshire Electricity Board and divisional controller of the Yorkshire Division, B.E.A., attended the final performance.

Obituary

Mr. H. S. Hartley.—The death occurred on 18th February, at the age of fifty-five, of Mr. H. S. Hartley, M.I.Mech.E., who for the past twenty years was deputy manager of the Stirling Boiler Co., Ltd., London.

Mr. Robert Scott, B.Sc., A.M.I.E.E., died suddenly at a Glasgow hotel on 22nd February. Born in Larkhall, Mr. Scott was educated locally and at Glasgow University. For some years he had been in charge of Dalmarnock power station, Glasgow.

Mr. B. H. Jenkinson. — The death occurred on 22nd February, at Eastbourne, at the age of eighty-five, of Mr. B. H. Jenkinson, A.M.I.E.E., a pioneer in the electrical industry, who practised as a consulting engineer in Holborn for many years.

Wills

Mr. C. A. Hopkins, late general manager of Sunderland Corporation Transport Department, and formerly manager of Wigan Corporation Tramways Department, who died on 16th October last, left £2,239 gross (£2,133 12s 9d net).

Mr. Maxwell Smith, M.B.E., M.I.E.E., a member of the engineering staff of Ericsson Telephones, Ltd., Beeston, Notts, who died on 26th September last, left £4,897 gross (£4,841 net).

Mr. J. R. Cowie, A.M.I.E.E., southern area manager for A. Reyrolle & Co., Ltd., and chairman of the British Electrical and Allied Industries Research Association, who died on 5th August last, left £9,221 (£9,046 net).

NEW BOOKS

Business Budgets and Budgetary Control. By A. W. Willsmore, M.I.Ec.E., A.M.I.I.A. (203 pp.) Sir Isaac Pitman & Sons, Ltd., Parker Street, Kingsway, W.C.2. Price 15s.

This is the third edition of a book first published in 1932 and last reprinted before the war. In a preface the author refers to the temptation to recast some of the earlier chapters in the light of to-day's special conditions, with particular reference to controls, but he prefers to believe that there will be a gradual return to greater freedom of action.

Nevertheless, there have been certain small concessions to the spirit of the times. Part of the chapter on "Forward Planning" has been rewritten. In some ways forecasting has been made easier by the publication of official statistics of many phases of industry as well as by a tendency of trade associations and others to divulge more information. The author is not one who thinks that form-filling is always a waste of time.

The book remains as useful a guide to business budgeting as can be expected in this uncertain modern world.—J. H. C.

Traffic and Trunking Principles in Automatic Telephony. By G. S. Berkley, M.I.E.E. Pp. 339; figs. 87; index. Ernest Benn, Ltd., Bouverie House, Fleet Street, London, E.C.4. Price 21s.

The study of traffic and trunking problems in automatic telephony is based on Erlang's theory of the laws of probability, and on this theory the whole of the calculations of switch quantities for a modern automatic exchange are based. Until the advent of Mr. Berkley's book on traffic and trunking principles, information on the subject was to be found only in isolated articles published by individuals from time to time. The author collated the information and produced a textbook which has become the standard work on the subject for all who are concerned with the design and manufacture of automatic telephone exchanges for the British Isles. The revised edition recently published includes, in addition to the original material, complete information on the problems involved in traffic and trunking introduced with the advent of the present British Post Office Standard 2000 type equipment, and a valuable section concerning the trunking technique applied to the now standard B.P.O. unit automatic exchange types 13, 14 and 15 is also included.

Elsewhere the book has been amended in accordance with present-day practice, including the problems involved with the introduction of multi-metering, and as a result the book is brought into the forefront of the modern telephone engineer's library of information.

The book is particularly recommended to the student studying for the City and Guilds examinations. It contains many useful worked examples and questions for answer and should prove invaluable to the solution of problems on traffic and trunking. Besides collating the available information the author provides an excellent bibliography of the many articles on the subject which have appeared from time to time. This, too, has been revised and now contains the latest references.

The book is without doubt the best of its subject on the market, and although dealing particularly with British Post Office practice and equipment, it contains references to other systems which will form a useful background for the student. The author has wisely confined himself mainly to a study applied to the Strowger system only, and as a result has produced a complete and up-to-date treatise on a subject which is of first importance in the art, and largely neglected in the average textbook. —K. B. B.

Books Received

Radio Valve Data: Characteristics of 1,600 Receiving Valves. By the staff of *Wireless World*. Iliffe & Sons, Ltd., Dorset House, Stamford Street, S.E.1. Price 3s 6d. (postage 3d).

The annual issue of the *Wireless World* Valve Data Supplement was suspended in 1940 owing to paper restrictions. The material now appears as a separate book of 80 pages, in which the main electrical characteristics of 1,600 British and American receiving valves are tabulated.

Road Transport Law. By L. D. Kitchin, A.M.Inst.T., Assistant Editor, Motor Transport and Bus and Coach. Sixth edition. Pp. 96. Iliffe and Sons, Ltd., Price 5s (postage 3d).

Power System Stability. By E. W. Kimbark. Pp. 355; figs. 63; index. Chapman & Hall, Ltd., 37, Essex Street, London, W.C.2. Price 36s in U.K.

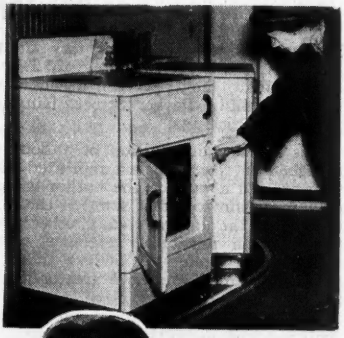
Technical Dictionary — German/English/French (Vol. II). By H. Thali. Pp. 310. Swiss Book Depot, 28, Museum Street, London, W.C.1. Price 35s in U.K.

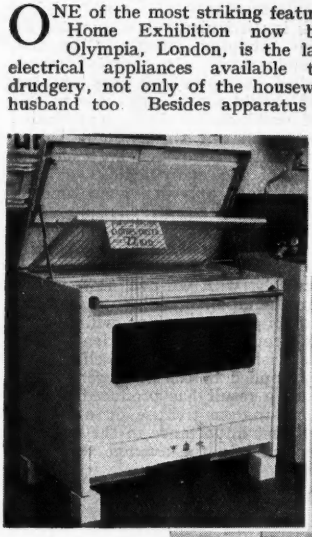
Electrician's Maintenance Manual. By W. E. Steward. Pp. 144; figs. 59; index. George Newnes, Ltd., Tower House, Southampton Street, London, W.C.2. Price 6s.

IDEAL HOME EXHIBITION

Saving Labour with the Aid of Electricity

ONE of the most striking features of the Ideal Home Exhibition now being held at Olympia, London, is the large number of electrical appliances available to reduce the drudgery, not only of the housewife, but of her husband too. Besides apparatus for helping in the preparation and serving of food, for providing hot water and for cleaning floors, furniture, clothes, crockery, etc., it is possible to see such things as lawn mowers, hedge cutters and planing machines.





Fisher clothes dryer and a convector with (below) English Electric glass plate warmer and refrigerator

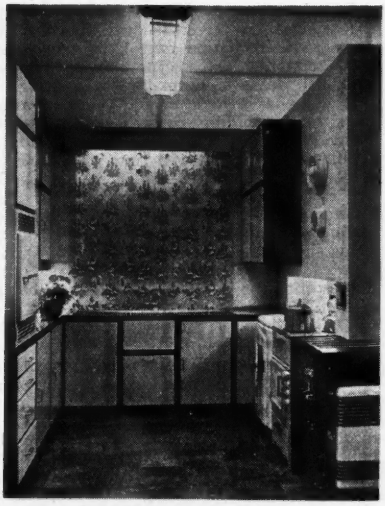
Latest English Electric cooker with extra large oven. Below: New "Goblin" washing machine

Arcason dish washing machine

Obviously few people can achieve the ideal labour saving home all at once. An imaginative exhibit of the British Electrical Development Association is therefore of especial value in showing how an old-fashioned kitchen may be modernized in easy stages. In the first phase the kitchen is

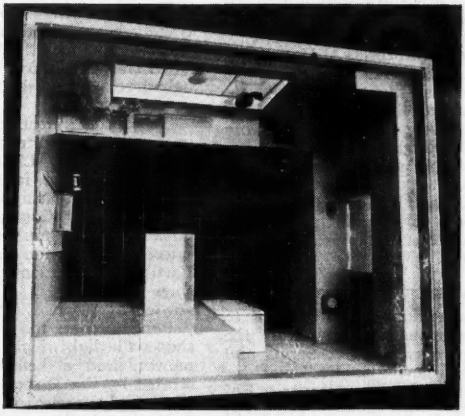
tiled, the cupboards are enclosed and a steel sink is added, together with an electrically heated drying cupboard, fluorescent lighting and electric clock. The addition of an under-the-draining-board water heater, refrigerator, pot rack and convector heater, two plug points and further wall cupboards is the second stage. Finally, a washing machine is substituted for the wash boiler and a modern cooker for an old type, an extract fan and the latest type of fluorescent lighting being introduced. The kitchen is also equipped with a device which sharpens knives and cleans shoes, brass, silver, cutlery, etc.

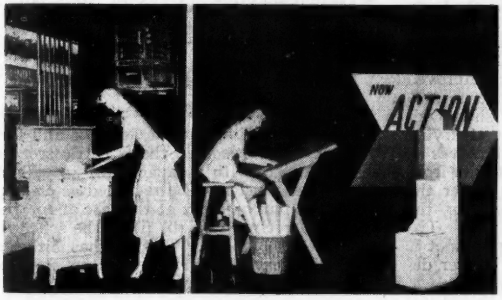
In a representation of a modern lounge the television receiver is made the central feature with an electric reflector fire underneath. A new form of lighting seen in the same room makes use of concealed fluorescent tubes behind louvres in the ceiling, a diffused light being thus reflected over the whole room. Concealed spotlights controlled from a central point provide more concentrated light for individual activities in any part of the room.



Final stage in the E.D.A. scheme of kitchen modernization

Further suggestions for kitchen design are to be found in the British Iron and Steel Federation's exhibit where in the "Kitchen of Tomorrow" are a cooker with glass doors, a hot-air hand dryer and a refrigerator with compartments for different kinds of food and a deep-freeze apparatus for long storage. A representative display of Coldrator, Frigidaire, Kelvinator, Marco and Prestcold refrigerators is to be seen in the British Refrigeration Association's composite display.





Right: G.E.C. model giving a bird's eye view of various applications of electricity in the kitchen. Below: E.D.A. tableau indicating that the time has come for translating the Association's planning work into action

A series of miniature reproductions of a dining room, kitchen and living room on the General Electric Company's stand indicates various uses of electricity in the modern home, the individual appliances concerned being available for inspection nearby. A feature of the living room appliances is the range of "Dispersive" reflector fires having a patented multi-parabola reflector which ensures comfortable warmth over an arc of 120 deg in the horizontal plane, the heat being

uniformly spread over the whole area. Both the television receivers shown provide all-wave radio reception and have flat-ended tubes enabling the picture to be viewed from any angle in normal room lighting.

A new 5-cu ft domestic refrigerator is provided with chilling compartments and a "Salador." A selection of cookers includes a "bungalow" type and the "D.C.438E," a modernized standard model. A new boiling ring, kettles, percolators, hair-dryers, cleaners, floor polishers, toasters, clocks and sewing machine motors are among other items shown. G.E.C. lighting in the Davis Estates' demonstration house is 90 per cent fluorescent, the switches throughout being of the "Mutac" silent a.c. type.

New English Electric Cooker

Three streamlined cabinet electric cookers on the English Electric stand include the new "2009" model shown for the first time. Suitable for families up to eight persons, it incorporates three hotplates and a grill boiler and has an extra large oven. Other English Electric products shown are reflector fires, refrigerators, washing machines, and a plate warmer of glass and chromium-plated tube with the element bonded to the underside of the glass.

Of especial interest on the H.M.V. stand is a new television receiver selling at 36 guineas plus purchase tax. It incorporates the new 10in. aluminized "Emiscope" tube and gives a picture size of 9in. by 7in. Many other new H.M.V. products include a horizontal toaster, two types of coffee percolator, a hairdryer, a heat-controlled iron, a travelling iron and the "Emidicta" office recording machine employing magnetized paper discs which can be folded and sent through the post.

Home Laundry Equipment

Considerable attention is being given to home laundry equipment. Apart from the now well-known Thor, Hoover, Servis and Bendix machines, a new "Goblin" machine made by the British Vacuum Cleaner & Engineering Co. makes its debut. Priced at 25 guineas plus purchase tax, it takes nearly 5½lb of dry clothes and has a 14in hand-operated wringer which when not in use folds down under a table top lid. Washing is by means of an agitator. An improved type of electrically operated wringer is now included on the machine of H. Fisher (Oldham), who also introduce a range of drying cabinets, the largest one of which serves as a convector heater and incorporates an ironing board (which pulls out from under the enamelled table top) and drawers for the electric iron and ironing board pad. The "Simpartex Star" model drying cabinet is shown by Exico, and J. and D. Walter demonstrate their "No-cord" iron.

The "Arcason" dish washing machine (Electroflo Meters) suitable for pans as well as crockery, glass and cutlery, is supplied both as a separate unit and for incorporation in a sink. Instantaneous water heaters are demonstrated by both Harbrix Industries and Reliance Domestic Appliances, the latter company showing the "Hotentot" unit together with the "Aquastat" apparatus for overcoming hard water difficulties.

Cleaners and Polishers

Hoover, Bylock, Electrix, Electrolux, B.V.C. ("Goblin"), Vactric and Tellus provide plenty of vacuum cleaners to choose from. The Truvox and Vactric floor polishers are fitted with horizontally rotating brushes; S. C. Johnson & Son have a vertically rotating brush machine which will be on sale in May. The new 'O-mix" mixing machine shown by John Perry & Co. (Plastics) will sell at about £10. The Churn Company demonstrates another type of mixer, the "Sunbeam," while apart from the "Kenwood" mixer, Whizards are making a feature of English Electric and Boulton & Paul refrigerators and the Morphy-Richards "pop-up" toaster. Electrically heated food trolleys can be seen on the stands of both Bertram Thomas and L. G. Hawkins & Co., the latter also showing hair-dryers, irons, kettles, car heaters, glue pots, etc.

"Solectra" electric radiators are shown in appropriate surroundings on the Bratt Colbran stand. Lighting fittings of all types are to be found on the stands of the General Lighting & Equipment Co. and Philip Shaw (Contractors). The "Miniphone" (Comuniphone, Ltd.), combines intercommunication and radio systems. Fortiphone, Ardente and Ossicaide all show hearing aids. Dry shavers are demonstrated by Arvin Electric.

For gardeners the A.M.I. Lawnmower Co. shows the lightweight "Ladybird" electric mower, and a hedge trimmer is demonstrated by the Tarpen Engineering Co., who also supply an electric plane. Chase of Chertsey are exhibiting an electric seed propagator.

Purchase Tax on Storage Heaters

THE Commissioners of Customs and Excise have decided that electric storage water heaters with a capacity of 40 gallons and under must now be regarded as chargeable with purchase tax at the rate of 100 per cent under Group 12 (b) (i) of the schedule of chargeable goods. The tax has hitherto been chargeable on storage heaters not exceeding 30 gallons capacity.

Industry and the House

Discussion of Nationalized Industries

BY F. J. ERROLL,
M.A., A.M.I.E.E., M.P.

THE House of Commons has had a quiet fortnight, and during the days immediately preceding the South Hammersmith bye-election many members were absent from their places through helping the two candidates by speeches and door-to-door canvassing. During one such quiet evening Opposition members found a valuable loophole in the "iron curtain" which has hitherto prevented discussion of nationalized industries. A Private Bill introduced by the British Transport Commission was held by the Speaker to be a general powers Bill and any matter affecting railway administration could be discussed on the second reading. Members on both sides of the House were quick to seize their opportunity and a lively debate ensued. The condition of the District Railway was satirized by Mr. John Boyd Carpenter, and several speakers referred to railway electrification schemes. The Minister of Transport in his reply did not attempt to answer all the points raised, but confined himself to a survey of the rates and fares problem which the B.T.C. is facing. When the British Electricity Authority promotes a Private Bill there may well be an opportunity of discussing the affairs of that body.

Expediting Rhondda Installations

The manifold aspects of power supply at home and abroad were reviewed by the House in a variety of questions. The grit problem at Fulham power station is now being tackled as the Chancellor of the Exchequer has removed the ban on the installation of the grit arresting plant. Electric power installations for factories in the Rhondda valley will be completed shortly, Mr. Mainwaring, the Labour M.P. for the area, was informed by Mr. J. Edwards. "The work necessary to complete the installations in those as yet unallocated will depend on tenants' requirements, but every effort will be made to expedite the work when these are known."

In the House of Lords, Lord Hailey, the author of the African Research Survey, obtained from the Minister of State for Colonial Affairs, Lord Listowel, a statement on the hydro-electric station at Owen Falls, Uganda. The outline of the scheme is already well known, and Lord Listowel added that "the exact manner in which it is hoped that the Government concerned will participate remains to be worked out. It must in any case be a matter of some months before construction work on the hydro-electric installation at Owen Falls can begin. Preliminary planning has, of course, been taking place. The generation, transmission and distribution of hydro-electric supplies within the Uganda Protectorate will be the sole responsibility of the Uganda Electricity Board, recently constituted for this purpose by the Government of Uganda."

Criticism of Purchase Tax

A detailed answer given to Mr. Pitman on the subject of purchase tax indicates the important contribution which the electrical industry is making towards the total yield of approximately £300 million. Electrical and gas appliances together yielded £10.8 million, lighting fittings and bulbs produced £5.4 million and wireless sets and batteries accounted for a further £10.4 million. In addition to the disquiet about the incidence of purchase tax and its effect on retail sales as Budget Day approaches, there is a wide criticism of the imposition of purchase tax on articles essential for the provision of industrial welfare facilities. If these facilities, such as improved wash-houses and canteens, are demanded by the Government, runs the argument, then surely the articles concerned should not be subject to a high rate of purchase tax. The difficulty of the Treasury is to differentiate between various uses, as it is much easier to tax articles as a class. Thus water heaters of a domestic pattern are chargeable with tax even though they may be used for industrial purposes.

Firms making water softeners got round this difficulty by producing a softener with an industrial finish, which was accepted by the Customs and Excise Authorities as being an industrial softener. The makers of gas water heaters tried to do the same, but the difference was not acceptable and the Treasury is at present trying to iron out the anomaly. Purchase tax causes many headaches for officials and manufacturers alike. Unfortunately its total yield is now so high that it seems unlikely that the Chancellor will dispense with this revenue-collecting weapon.

The incursion of the Government into the field of hearing-aid manufacture has had some unpleasant repercussions for private manufacturers as questions on the subject revealed last week. The Government is permitting certain manufacturers to make the "Medresco" hearing aid for export. The designs and specifications are supplied free of charge and the firms in question do not have to make any provision in their export selling price for future design and development work. Where the firms use tools and equipment originally procured for contracts for the National Health Service an appropriate charge is made. The effect of this is that firms selling a comparable privately designed aid are faced with competition in overseas markets from what is in effect a subsidized Government-pattern aid.

PARLIAMENTARY NEWS

By Our Special Reporter

DURING the second reading debate on the British Transport Commission Bill in the House of Commons, Mr. Boyd-Carpenter said that Clause 5 provided for the widening of the District Railway for 1,600 yards in the borough of Ealing. The mere widening of the track in some of the outer sections could not but have as its short-term effect the increasing of the congestion in central London.

Mr. Ernest Davies declared that the ultimate solution to congestion on the railways, particularly around London, was electrification and capital development, but that was a long-term solution.

Mr. Erroll said that with regard to railway electrification he thought they were in grave danger of "falling over themselves backwards." Railway electrification of the traditional type was all right in the early 'twenties, and maybe in the 'thirties; but because it was all right for dense suburban lines it did not follow by any means that a system of electrification was the right solution for a modern British railway. Great advances had taken place in motive power, for instance, the diesel-electric locomotives which were being tried out to-day —one of the last developments of the old L.M.S. Railway; there was also the possibility of utilizing gas-turbine-driven locomotives. Several other projects at present were only in the experimental stage. With trains running as they were to-day, with the large number of accidents which had taken place recently, it was surely time for a radical overhaul of the signalling system.

Mr. Barnes, the Minister of Transport, in the course of his reply, said that since the war some 30 miles of additional electrification and extension of the tube system in London had taken place. That was a major work of improvement, and there were some 28 more miles under construction, the bulk of which, he believed, would be completed this year. The present capital cost of new extensions was approximately £14 millions.

Wireless Relay Industry

The Postmaster-General (Mr. Paling) told Capt. Hewitson that the future of wire broadcasting was closely bound up with that of various technical means now available for distributing broadcast programmes. It would therefore be remitted for consideration to the forthcoming Committee of Inquiry on the B.B.C.'s charter. All the licences held by wireless relay operators could be terminated at any time subject to twelve months' notice, but the holders were being informed that it was the intention of the Government to allow the licences to run until the end of 1951. Before that date, the Government would be in possession of the Committee's report and would be able to decide future policy.

Television Extension

Dr. Segal asked the Postmaster-General what were the northernmost limits at which it was intended television programmes would be satisfactorily received from the new television station for South Lancashire.

Mr. Paling said that this could not be settled until a site had been definitely decided on, but the B.B.C. expected that it would be possible for the programmes to be received satisfactorily in Preston.

I.E.E. Dinner

SERVICE TO THE COMMUNITY

THERE was an air of pleasant animation about the annual dinner of the Institution of Electrical Engineers at the Connaught Rooms last week. More than 650 members and guests attended. Mr. T. Graeme N. Haldane (president) occupied the chair.

Sir Norman Birkett (Judge of the King's Bench Division) proposed "The I.E.E." in an entertaining speech, during which he mentioned that the Institution was the largest professional body in the world, remarking that it gave a Briton pleasure to say so. But mere size did not count so much as prestige, which depended upon service rendered to the community at large. The I.E.E. made that one of its first objectives, being a learned body that aimed at spreading knowledge. Apart from things imperative to a great Institution, the greatest was to ensure that the highest standard of professional duty was carried out. The I.E.E., being keenly alive to the maintenance and preservation of those things, had raised itself to the proud position of competence to assist and ability to guide in all electrical matters. Sir Norman said he was particularly happy to couple with the toast the name of the president because his uncle had made him (the speaker) a King's Counsel and so opened to him a busy and happy career.

Sir Norman Birkett being received by Mr. T. G. N. Haldane. Left, Mr. F. Bray (Ministry of Education), Dr. P. Dunsheath and Dr. P. F. R. Venables

Mr. W. K. Brasher (Secretary) with Mr. E. Davies (Solicitor I.E.E.), Mr. M.Waterhouse (Pres. R.I.B.A.), Col. B. H. Leeson (B.E.A.M.A.) and Mr. J. R. Beard

Sir Vincent Z. de Ferranti, Mr. M. T. Tudsbury (chief civil engineer, B.B.C.), Mr. J. L. Eve, Sir John M. Kennedy and Mr. P. V. Hunter. Right, Dame Caroline Haslett, Mr. F. Jervis Smith, Sir Norman Birkett, Mr. P. Good and Sir Henry Self (deputy chairman, B.E.A.)

Mr. Haldane, in responding, looked back to the early part of the nineteenth century when the distinction between pure and applied science was not so clear as it had now become. Perhaps the wider range of knowledge then possessed by members gave them a better sense of proportion than specialization seemed to be doing to-day. Pure science was at one time considered to be the more important, whereas recognition of the value of applied science had now rendered it necessary to base the education and training of engineers on broad lines that would enable them readily and quickly to grasp the principles on which science was applied.

To have restricted itself to matters of immediate concern to its members, the I.E.E. would have limited its scope, whereas in fact it had much wider aims. It had a duty in respect of education and training, not only to professional men, but also to electrical technicians as explained in a short memorandum just issued on "The Personnel of the Electrical Industry." It initiated safety measures and took part with public departments in matters of electrical concern, being active also in association with the "Civils" and "Mechanicals" in the international field. Those were some of the ways in which the Institution was endeavouring to render service to the community, which it conceived to be its duty.

Mr. P. Good (past-president) proposed the toast of "The Guests," and in responding Sir John H. D. Cunningham (Admiral of the Fleet) referred to the particularly cordial relations existing between the I.E.E. and the Navy in which an electrical branch had recently been formed (also an "electrical" Admiral had been appointed) which with the help of the Institution would become one of the most important sections of the Royal Navy.

Torquay Convention

PRELIMINARY PROGRAMME

PARTICULARS are now available of the arrangements for the first British Electrical Power Convention, to be held at Torquay from 13th to 18th June. The full programme will be circulated to delegates early in May.

Proceedings during the first two days will be confined to delegates from the British Electricity Authority, Divisions and Electricity Boards, but other delegates will be able to obtain their badges during the two days. On the 14th (Tuesday) the local Rotary Club is arranging a luncheon for visiting rotarians and in the afternoon Lord Citrine (President of the Convention) will open the exhibition at the North Quay, adjoining the Pavilion in which the meetings will be held. On Tuesday evening the Mayor and Mayoress will hold a reception at the Town Hall and this will be followed by dancing.

The Convention opens on the 15th (Wednesday) with a civic welcome by the Mayor and the presidential address by Lord Citrine. In the afternoon Mr. C. T. Melling, chairman of the Eastern Electricity Board, will present a paper for discussion on "Meeting the Needs of the Consumer in the Electricity Supply Industry." There will be a garden party for the ladies at Torre Abbey. Lord and Lady Citrine will hold a reception, followed by a dance, at the Town Hall in the evening.

Thursday's proceedings will open with a paper by Mr. T. G. N. Haldane, President of the Institution of Electrical Engineers, on "High Voltage Transmission in the Electricity Supply Industry," with supplementary papers prepared on behalf of the British Electrical and Allied Manufacturers' Association and the Cable Makers' Association. A discussion will follow and the proceedings will be resumed in the afternoon. The customary luncheon organized by the Electrical Association for Women will be held at the Grand Hotel. This will be limited to 316 persons and tickets (10s 6d.) can be obtained from the Director of the E.A.W., 35, Grovenor Place, S.W.1. There will be a similar limit on the number to be present at the annual dinner at the Grand Hotel in the evening at which the Prime Minister (the Rt. Hon. C. R. Attlee) will be the principal guest. Afterwards there will be a dance at the Town Hall.

A paper on "The Electrical Contractor's Place in the Industry and His Service to the Public" will be presented on behalf of the Electrical Contractors' Association at Friday morning's session, followed by a discussion. In the afternoon delegates will have a choice of two coach tours or a sea cruise.

Mr. G. L. Preece is again making the arrangements for the customary golf competition to be held during the Convention.

I.E.E. Scholarships

THE Council of the Institution of Electrical Engineers will this year consider the award of five research scholarships and grants and five scholarships for students to attend universities and technical colleges. Details are given in our advertisement pages.

COMMERCE and INDUSTRY

Large Overseas Contracts for British Plant

SIR CLAUDE GIBB, chairman of C. A. Parsons & Co., Ltd., has provided further details of the order which his company has received from the Hydro-Electric Power Commission of Ontario in amplification of our last week's note on the subject. The turbine of the set will be of the two-cylinder type, with double-ended low-pressure cylinder, and is designed for operating with steam at 850 lb/sq in and 900 deg F.

The alternator, which will be hydrogen cooled, will in the first instance operate as a 25 c/s machine with an output of 65,000/70,000 kW at 11 kV when running at a speed of 1,500 r.p.m. and with a two-pole rotor. When the existing 25 c/s load of the Commission has been converted to 60 c/s the generator will be modified to operate as a 60 c/s machine giving 78,000/90,000 kW at 13.8 kV when running at 1,800 r.p.m. with a four-pole rotor.

The new station is expected to be in commission in time for the winter load of 1951.

Cables for Indian Fertilizer Factory

The Government of India is establishing a fertilizer factory at Sindri with a designed production of about 300,000 tons of sulphate of ammonia per annum. The cost, including a township of houses for 4,000 employees, will be more than £10,000,000. The power station now being built will have an installed capacity of 80,000 kW. British Insulated Callender's Cables, Ltd., are supplying the cables and accessories for the whole of the electric power services, including distribution from the generators to the circuit breakers and thence for supplying all motors and utilization devices throughout the factory, including connections to intermediate transformers and auxiliary equipment. The ultimate value of the contract, including the installation and jointing of the cables, will approach £200,000. Altogether more than 130 miles of power cables will be used. In addition to cables, B.I.C.C. are supplying large quantities of copper earthing strip, earthing rods, sealing ends and joint boxes.

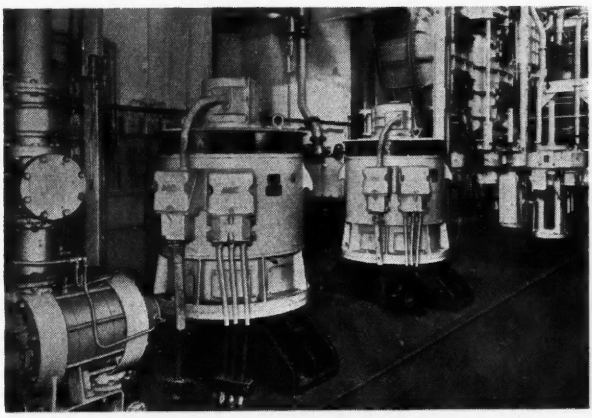
The consultants for the factory are the Chemical Construction Co., New York, and the Government of India's purchasing agents are the Power-Gas Corporation, Stockton-on-Tees.

British Council and Engineers

Hitherto the British Council has been advised on engineering matters by a panel of experts. Now it is to be advised by the secretaries of the Institutions of Civil, Electrical and Mechanical Engineers backed by their organizations. At the same time the presidents of the three Institutions have accepted invitations to join the Council's Science Advisory Committee.

Drives for Australian Power Station

The General Electric Co., Ltd., in conjunction with its Australian associated company, the British General Electric Co., Pty., Ltd., has supplied five motors (one being a spare) for four Vickers-Armstrong circulating water pumps in the Bunnerong "B" power station of the Sydney County Council. These are slip-ring motors of the vertical spindle type and are rated normally at 300 h.p., 415 V, 3 phase, 50 cycles when running at 585 r.p.m. They are controlled by G.E.C. remote operated contactor type starters. The speed range of these motors



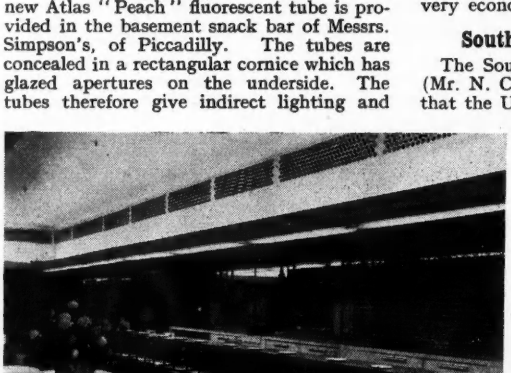
G.E.C. 300 h.p. slip-ring motors for Bunnerong power station

is 400/585 r.p.m. and the control is by rotor resistances regulated from the remote control cabinet. Indicating lamps show the step positions of the regulators and local manual operation is provided for use in emergency.

As the motors are required to operate over a voltage range of 380-440 V, under-voltage releases are not fitted to the stator breakers. In order to prevent the overload trips functioning when the supply voltage falls, however, a contactor, which is actuated by special under-voltage relays in the control cubicle, inserts resistance in the rotor circuit. One of these relays inserts one step of the starting resistance when a voltage drop of 10-20 per cent occurs while the other relay inserts the whole of the starting resistance when the voltage falls by 30-40 per cent.

Snack Bar Lighting

An interesting example of the use of the new Atlas "Peach" fluorescent tube is provided in the basement snack bar of Messrs. Simpson's, of Piccadilly. The tubes are concealed in a rectangular cornice which has glazed apertures on the underside. The tubes therefore give indirect lighting and at the same time provide direct lighting for the counter immediately below. The installation was carried out with "Atlas" tubes and control gear manufactured by Thorn Electrical Industries, Ltd.



"Atlas" fluorescent lighting in a snack bar

Eastern Board's Publicity

The Eastern Electricity Board is maintaining the high standard of its advertisements appearing in newspapers in the area. The January display stressed the headway made in connecting up farms (700 in the first nine months of operation) and it was embellished with attractive black-and-white drawings. The February advertisement was a general progress report for the first nine months; it included the facts that consumption in the area rose by 310 million kWh and 39,000 new consumers were connected in spite of the prevailing difficulties.

Siemens and Berlin Blockade

Reuter reports that the Siemens Electrical Works may be forced to curtail operations sharply within a few months' time unless stocks of bulky raw materials, now being used up rapidly, can be replaced by the airlift. The concern is by far the largest employer in Berlin; it still has 25,000 people on its pay-roll, compared with 60,000 in 1938. The works have been operating at only just over 6 per cent of their pre-war capacity for the last eight months but no workers have been laid off despite the Russian blockade, though they have not always been engaged on jobs of a very economic kind.

South African Import Control

The South African Minister of Finance (Mr. N. C. Havenga) announced last week that the Union would impose physical control of all imports from both sterling and non-sterling areas. Permits would be required for the importation of goods not on the prohibited list. The existing exchange quota scheme for imports from non-sterling areas would continue until 30th June, 1949.

Goods ordered from sterling areas after 24th February would not receive import permits unless the Department of Commerce and Industry considered them reasonable. Mr. Havenga emphasized that the restrictions on imports were of a temporary character and designed to preserve the Union's exchange resources and not to give additional protection to local industries.—*Reuter.*

Honduras Electrical Trade

In the course of a review of Commercial Conditions in Honduras, dated September, 1948, published for the Board of Trade by H.M. Stationery Office (1s net), it is stated that in order to be accepted by the Government controlled electric power company in Tegucigalpa and the other electrcity supply companies in Honduras, fittings, installations and accessories should comply with the conditions laid down by the National Electric Code and the standards of Under-

writers Laboratories, Inc., both of the United States. The supply system of Tegucigalpa is 220 V a.c. and mass produced radio sets, radio gramophones and refrigerators received from the United States are accompanied by transformers to adapt them to the local system. American manufacturers have the market practically to themselves owing to mass production enabling them to quote low prices.

Electricity in Tegucigalpa costs 45 centavos (1s 1½d) per kWh for lighting and 15 centavos (4½d) per kWh for power. The demand for domestic electrical appliances in the city is therefore very limited, and the same applies to the rest of the country, except in those districts where electricity is supplied by the American fruit and mining companies. The total imports of radio sets and radiograms, hand electric torches, batteries, dynamos, and electric motors, accessories for electrical machinery, refrigerators and ice boxes (including electric refrigerators) in 1946-47 amounted to 720,000 lempiras (1 lempira=one half the United States dollar), of which America supplied goods of a total value of 710,000 lempiras.

Canadian Trade Fair

This year's Canadian International Trade Fair is being held in the Exhibition Grounds, Toronto, from 30th May to 10th June. The display is to be organized in twenty-one groups. One will be devoted to electric tools, motors and supplies, including lighting fittings. Household appliances and radio equipment will form another group, and there will be scope for electrical manufacturers in others.

Details are available from Miss M. A. Armstrong, Canadian Government Exhibition Commission, Canada House, Trafalgar Square, S.W.1.

Industrial Safety Conference

This year's National Industrial Safety Conference will be held at Scarborough from 13th-15th May. The conference, which is being organized by the Royal Society for the Prevention of Accidents, will be open to all interested in industrial safety, whether members of the Society or not. Particulars, and application forms, can be obtained from the Industrial Safety Division of the Society, 131, Sloane Street, London, S.W.1.

Electrical Housecraft

In view of the success of the two-day course in electrical housecraft for teachers arranged by the Electrical Association for Women in November, a duplicate course was arranged at E.A.W. Headquarters on 21st and 22nd February. In addition to this special course a series of lectures has been given to L.C.C. teachers on "Elementary Electricity for Girls Secondary (Modern) Schools."

Midland Dealers' Television Conference

The television conference for dealers in the Midlands which, as already announced, is being organized by the British Radio Equipment Manufacturers' Association, is to be held at the Friends' Institute, Moseley Road, Birmingham, at 1.30 p.m. on 23rd March. Mr. G. Darnley-Smith will be chairman and there will be a series of 15-minute talks by members of the B.R.E.M.A. Television Promotion Committee. Invitations to the conference are being sent by B.R.E.M.A. to dealers in the Midland television area and to wholesalers. The detailed final programme will be forwarded with the tickets.

Change of Address

The Purchasing Department of the London Division of the British Electricity Authority is moving from Ergon House to 42, St. John's Wood Road, London, N.W.8, on 21st February. The new telephone number will be Cunningham 7492.

Trade Announcements

Victor H. Iddon, Ltd. ("Nettle" "Bakelite" electrical accessories) have appointed Wilmor & Co., 17/19, Queen Street, Belfast, as their agents for Northern Ireland, and Mr. C. M. Wilson, 45, Fleet Street, Dublin, as their agent for Eire.

Hogan & Wardrop, Ltd., have been appointed by **Cass & Phillip, Ltd.,** to handle the whole of their home and export sales.

The London sales staff of **Rubery Owen & Co., Ltd.,** of Darlaston, and of certain other associated companies of the Owen organization, is now at Kent House, Market Place, Oxford Circus, W.1. The Owen organization export staff is also at this address. Mr. S. Sloan, previously London sales manager of Rubery Owen, has been appointed general sales manager of the company and is now operating at the Darlaston head office. Mr. G. E. Montague succeeds him as London manager.

A.B. Metal Products, Ltd., has opened a London office at Ludgate House, 107, Fleet Street, London, E.C.4 (telephone: Central 5667-8). Mr. Woolf, sales manager, will be resident there.

The address of **Lectrix (Bristol), Ltd.,** is now Glasshouse Lane, Feeder Road, Bristol, 2.

Mr. P. R. Davies has been appointed sales representative for South Wales and West of England area for **Clifton Aircraft.**

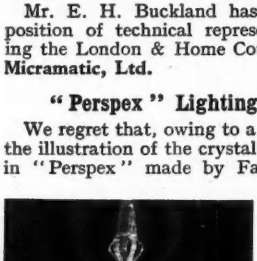
Mr. Davies was previously with South Wales Switchgear, Ltd., as technical engineer for domestic products.

Metropolitan Distribution, Ltd., informs us that its representative in the Bournemouth area is Mr. A. H. Gibbings and not Mr. J. Gibbings as it previously announced.

Mr. E. H. Buckland has taken up the position of technical representative covering the London & Home Counties area, for **Micramatic, Ltd.**

"Perspex" Lighting Fittings

We regret that, owing to a printer's error, the illustration of the crystal lighting fitting in "Perspex" made by Falk Stadelmann



Falk Stadelmann crystal lighting fitting in "Perspex

& Co., Ltd., reference to which was made in the "Recent Introductions" section of our last issue, was shown upside down. We reproduce the illustration with this note.

Double-Decker Trains

An experimental train of double-decked coaches, with more seats per coach than has before been possible, is being considered by British Railways for use on the Southern Region lines between London and Dartford. A "mock-up" replica of what one of the coaches will look like when completed was exhibited by the Railway Executive at Marylebone Station, London, on 25th February. A double-decker electric train would have eight coaches with a total seating capacity of 1,016 seats, equivalent to a 31 per cent increase in seating capacity over a normal eight-coach electric train consisting of six open vehicles and two compartment-type vehicles. The double-decker train is now being considered as an alternative solution to costly major widening works. In the "trailer" (non-motor) coaches there will be six double compartments, each with eleven seats on the lower deck and eleven seats on the upper. Electrically operated fans will provide constant ventilation in the upper part of the coach. Strip-lighting over the seats will help those seated to read without interference from the shadow of passengers standing or moving from one part of the coach to another.

Sales Lecture Meeting

The E.D.A. London and Eastern Joint Area held its second sales lecture meeting at Cambridge on 17th February. Lt.-Col. A. E. Knights, manager of the Fens Sub-Area (Eastern Electricity Board) took the chair and welcomed the 160 members of the staffs of the London and Eastern Boards. Mr. F. G. Nesbitt, vice-chairman of the B.E.A.M.A. Domestic Electrical Appliances Committee, addressed the meeting on "General Domestic Appliances."

After a lively discussion, Mr. Sydney (commercial officer of the Fens Sub-Area, Eastern Electricity Board) proposed a vote of thanks to Mr. Nesbitt.

Catalogues and Lists

Taylor, Tunnicliff & Co., Ltd., Eastwood, Hanley, Stoke-on-Trent,, Staffordshire.—Two catalogues of ceramics for radio, telecommunications and general electrical purposes.

Ferranti, Ltd., Hollinwood, Lancashire.—Priced folder giving characteristics, base connections and equivalents of radio valves and cathode ray tubes.

The Ray Engineering Co., Ltd., Waterdale Works, Southmead, Bristol.—Priced catalogue of "Rencol" moulded handwheels, handles and knobs for all trades.

London Fan and Motor Co., Ltd., 91a, Burghley Road, Tufnell Park, London, N.W.5.—Priced catalogue of propeller fans and associated equipment.

British Vacuum Cleaner and Engineering Co., Ltd., Goblin Works, Leatherhead, Surrey.—Four priced leaflets on vacuum cleaners, electric irons and a teamaker.

Hopkinson Electric Co., Ltd., Birchgrove, Cardiff.—Catalogue of a.c. motors of from ¼ to 100 h.p.

Information Department

THE extensive records of our Information Department enable us to reply to most queries, but occasionally we ask for our readers' assistance in tracing names and addresses not known to us. We should be glad to have such information regarding the makers of the following:—

"NON-PAREIL" starting gear.

General enquiries from readers relating to sources of electrical goods, makers' addresses, etc., are replied to by the Information Department through the post. Enquiries should be accompanied by a stamped addressed envelope.

Insurance of Electrical Exports

Manufacturers Should Obtain Maximum Marine Cover

By
JOHN C. HANCOCK,
A.M.I.Ex.

THE announcement made at the beginning of the year by Lloyd's underwriters and the insurance companies, to the effect that they had reverted to the pre-war practice of giving war risk cover to cargo only when it had become waterborne, serves as a timely reminder to electrical traders and manufacturers that they might, with advantage, review their present insurance arrangements and satisfy themselves that their shipments are adequately covered against all risks.

The new practice does not affect the cover given under the existing "Warehouse to Warehouse" clause, which extends to the goods insured—whilst they are transit, on land or in craft—cover against any of the *marine* perils named in the policy of insurance, but merely has the effect of limiting the cover against *war risks*, while the cargo is actually on board the exporting vessels. This has been made necessary in view of the potential damage which might result from the use of atomic power in any future "emergency."

"All Risks Including War"

Without referring to their insurance brokers or scrutinizing the clauses and endorsements on their marine policies, how many electrical exporters could say with absolute certainty that their goods, which as a matter of routine are insured against "all risks, including war" are covered, for instance, against pilferage and breakage? Admittedly some goods, such as transformers or turbo-generators, are not of a pilferable nature, or are not easily broken, but the same cannot be said of electric clocks and other attractive smaller items. Pilferage, however, is not exclusively a marine risk—nor is breakage—and while some insurance brokers might arrange to cover these risks without being specially instructed, such coverage does not follow automatically.

The Marine Insurance Act of 1906, Section 17, says: "A contract of marine insurance is a contract based upon the utmost good faith, and, if the utmost good faith be not observed by either party, the contract may be avoided by the other party." This means that any goods which the electrical trader or manufacturer wishes to have insured must be described precisely and that no "material circumstance" in connection with the risk must be withheld. A circumstance is material if it is likely to influence the underwriter as to whether he will accept or refuse the risk, or will influence him in quoting a premium.

Thus if a consignment of electrical goods is to be insured against "all risks," a "material circumstance" would be the fact that one or more of the cases contained something of a breakable nature. Supposing one of the cases contained cast iron joint boxes, or even electric lamps, then a material circumstance would obviously be withheld were the shipper to omit to declare this—had his intention been to cover also against breakage.

Similarly, if the same joint boxes are to be shipped unpacked the "interest" must be described as "cast-iron joint boxes, unpacked." When goods are sent packed the method of packing should always be stated as this may affect the rate of premium charged. An "interest" should be declared not as so many packages, but as so many crates, cases, casks, etc.

Danger of Under-Insurance

Shippers should always make certain that they cover their shipments for the full value. By under-declaring the value of an "interest" the shipper implies, intentionally or unintentionally, that he is taking the balance of the risk himself, and in consequence is liable to let himself in for all kinds of liabilities, not the least of which may be a demand for a general average contribution. To quote the Marine Insurance Act again, Section 18 says: "When the assured is insured for an amount less than the insurable

value . . . . he is deemed to be his own insurer in respect of the uninsured balance."

The general basis of valuation for insurance purposes is the invoice value of the goods, including freight and insurance charges, plus a percentage on the whole, say 10 per cent. If desired, and agreed with the broker or underwriter, a higher percentage may be added. Briefly, the sum assured should be sufficient to cover replacement value at destination.

Floating Policies

A convenient method of insurance is by means of a "floating policy." Such a policy, usually issued for a considerable amount, describes the insurance in general terms and leaves the names of the steamers and other details to be filled in by subsequent declarations. Provided declarations are made regularly, as and when the shipments are sent off, and in the manner agreed upon between the shipper and his broker, the shipper may have the comfortable assurance that all his shipments will be covered automatically—and without the necessity of having a separate policy for each consignment.

A shipper, having taken out a floating policy is under an obligation to declare all consignments coming within the terms of the policy. He cannot, for instance, declare some and adopt a wait-and-see attitude with others in the hope that he can avoid declaring those which he knows have arrived safely. While we have just said that all shipments must be declared against a floating policy the exporter may request his regular broker to issue a separate policy covering some specific or individual shipment, for example, in the instance of a policy of insurance being required by a bank for a cash-against-documents transaction. And certificates of insurance may also be issued against a floating policy when required.

The electrical exporter, sooner or later, is bound to be confronted with a marine insurance policy bearing an Institute Cargo Clause "Free of Particular Average" (F.P.A.) or "With Average" (W.A.). If on first acquaintance he is at a loss to know the exact difference between these two examples of insurance jargon his ignorance need cause him no embarrassment. If we substitute for "particular average" the rough and ready equivalent of "partial loss" the expression "free of particular average" should assume for the layman a more intelligible meaning.

A policy F.P.A. indicates that the assured, generally by paying a lower rate of premium, is entitled to claim only in the event of his interest becoming a total loss, "actual" or "constructive." Conversely, a policy "W.A." implies that the assured may claim against a partial loss as well as the total loss of his interest. The exporter, knowing his own goods better than anyone else, should be in the position of deciding which conditions of policy offer him the best cover.

Concerning the degrees of total loss, "actual" and "constructive," the former should need no explanation. A "constructive" total loss can best be explained by exampling a consignment of machinery packed, say, in four crates. Assuming that three of the crates arrive at the destination safely and that the fourth, containing certain components the lack of which renders the remainder of the equipment useless, does not arrive at all, then a total loss could be claimed. In so doing, the assured would have to abandon the whole of his interest to the underwriter who may realize something on the property surrendered to him.

Most Contingencies Covered

Provided the exporter is prepared to pay the required premium and can find anyone willing to take the risk, there are few contingencies which cannot be insured against. Most policies cover the assured against total loss and general average as a matter of course, but one risk for which the exporter should always be on the alert is when he sees the clause "Carried on deck at shipper's risk" endorsed on his bill of lading. Deck cargo must always be insured specifically, owing to the extra hazards involved.

As indicated earlier, certain other risks, not specifically marine, can also be covered on payment of an extra premium. Insurance against loss of drawback—in the event of goods being returned to the United Kingdom—can be arranged, as can the risk on goods which are being detained abroad through failure on the part of the importer to provide himself with the necessary licence. These and many other risks can generally be covered.

British Standards Institution

SPEECHES AT ANNUAL DINNER

THE increasing contribution that standardization is making to present national needs was the theme of the principal speeches at the Dorchester Hotel dinner last week of the British Standards Institution.

Mr. Roger Duncalfe (chairman, General Council) presided in the absence in South America of Lord McGowan (president) and proposed the toast of H.M. Ministers. He briefly explained how the B.S.I. functioned with the aid of 1,800 committees, remarking that it was not enough merely to create standards, their greater and wider use had to be secured.

Mr. H. Wilson (President of the Board of Trade) responded and distinguished between two kinds of standardization; one of shape and form and the other of quality by specifying construction and performance, which was the more important. He referred to the ways in which advances in standardization were bringing order out of chaos in several spheres, other than engineering, without seriously limiting the freedom of choice of purchasers. All of which he hoped eventually would lead to "quality marking" to preserve the enviable reputation of British industry.

Sir William J. Larke (vice-president) proposed the toast of "The Guests," observing that any particular industry could not directly control more than 30 per cent of its whole costs, the remainder being dependent upon materials and services furnished by other industries. Co-operation in that respect, of the kind that existed within the B.S.I., would make for progress.

Sir Frederick Bain (president, Federation of British Industries) replied for the guests and pointed out that what they needed was standardization of quality to provide the best materials with which to make their goods. They must beware of worshipping the false god of uniformity of the ultimate product.

Mr. G. R. Strauss (Minister of Supply), in proposing the toast of "The B.S.I.," explained that he preferred to look ahead rather than dwell upon past achievements. The need was to project standards into spheres of industry, including some sections of engineering, where they were lacking at present. How best to achieve that object was now being considered by Sir Ernest Lemon's Committee, which had just presented him with the first of its several reports. The Minister said he did not intend to be dilatory in moving forward upon such of that Committee's recommendations as might appear to be acceptable.

Sir William A. Stanier (chairman, Engineering Division Council, B.S.I.) responded on behalf of the Institution.

Fine Art Commission

Power Station Design

IN the eighth report of the Royal Fine Art Commission (Cmd. 7613, H.M. Stationery Office, 6d) it is stated that the British Electricity Authority has declared itself ready to pursue the policy with regard to the design of power stations agreed to by the Electricity Commission and Central Electricity Board. This was to ask all electricity undertakings proceeding with new power station developments to appoint an architect of standing to collaborate with the engineer and to submit designs to the Commission at an early stage.

The report says: "As the group of structures forming a power station almost always includes massive cooling towers, chimneys and extensive coal handling plant, which distract attention from the principal building, the Commission considers that elaborate architectural treatment of the main building is inadvisable, and would welcome a simple functional treatment which would also reduce the requirement for labour and material, and the time needed for construction. At the same time greater attention might well be given to the possibilities of tree planting in the immediate surroundings."

A directive relating to the more important principles is being drawn up by the Commission which is to be approved by the B.E.A. and sent to all concerned. At the same time negotiations are to take place with the Ministry of Town and Country Planning with a view to closer co-operation in the matter of siting and its effect on local amenities.

The appendix gives a list of eighteen power stations for which designs have been submitted to the Commission. During the latter part of 1947 the Commission had before it the designs for Bankside power station which were explained by Sir Giles Gilbert Scott. No observations were made

on the design itself which was considered eminently suitable for the selected site. It was decided, however, to inform the Minister of Town and Country Planning that this in no way altered the Commission's view that the site was inappropriate for an industrial building of this kind.

An amended design was approved for the extension of the Faraday Building (G.P.O.) which, under the replanning proposals around St. Paul's, will face the south side of the Cathedral.

Among other matters to which the report refers is that the Commission has recommended the restoration of the "historically and architecturally important" Mount Edgcumbe House, Plymouth, in its original form. This Tudor building, the home of Lord Mount Edgcumbe (Past-president and Hon. Member, I.E.E.), sustained war damage.

Fair Trading

COUNCIL'S REPORT FOR 1947-8

SINCE the last report of the Electrical Fair Trading Council was issued the electricity supply industry has been transferred to the British Electricity Authority. In consequence the Council, as it says in its 1947-48 report, has had to make a fresh approach to certain aspects of the Fair Trading Policy, upon the provisions of which the change-over must have "a fundamental and permanent effect."

Discussions have been proceeding with the B.E.A. and Electricity Boards in an endeavour to secure their adherence to the Policy and their support and assistance in its operation.

The Council says that the new electricity authorities must be regarded as a section of the industry and as such entitled to trade terms, subject to quantity discounts. Other bodies controlling nationalized services, which purchase for their own use only, must be regarded purely as users. In recognition of their "purchasing potential," however, it has been agreed that these bodies shall be entitled to special large buyers' terms, subject to quantity discounts, from those sections of the industry which recognize such buyers for discounts.

There have been discussions with representatives of the English and Scottish Co-operative Wholesale Societies in an endeavour to fit these societies into the framework of the Policy. It has been realized, however, that they will continue to purchase and resell electrical products covered by the Policy on a considerable scale, as they have done in the past. It is recommended, therefore, that they shall be regarded as a class of "special large buyers" and notwithstanding the terms applicable to such buyers in the relevant schedules of the Policy, the terms to be given, quantity for quantity, shall not exceed those available to electrical contractors and retailers. At the same time the Council appreciates that, because of long-standing pricing arrangements, some sections of the industry will be precluded from immediate compliance with this grading.

The case of service agents or exclusive distributors, who render special services to manufacturers or wholesalers under written agreement, has been considered and a new clause is to be inserted in the Policy permitting special discounts for such services.

An attempt is to be made to reduce the problem of the "recognized user" to more manageable proportions and, as a first step, member associations which recognize special large buyers are being asked to prepare lists of these buyers.

Negotiations between the Council and the Electric Water Heater Manufacturers' Association have resulted in agreement upon a new schedule which will overcome the manufacturers' difficulties and enable them to support the general principles of the Policy. This will appear in the new edition of the Policy which it is hoped to publish early this year.

The registered address of the Council is unaltered, but the secretariat is now at 103, Kingsway, London, W.C.2.

Welding Load Conditions

THE use of both arc and resistance welding expanded more than threefold during the war years and continues to be extensively employed for fabrication purposes, but the welding load is an unfavourable one for connection to electricity supply mains.

This aspect of the subject had been discussed by the plant manufacturers and five electricity supply associations before vesting day, a year ago. A joint memorandum entitled "Load Conditions of Arc and Resistance Welding Plant on Public Supply Mains," prepared by the B.E.A.M.A., has now been issued with the assent of the B.E.A. in the hope that a better understanding of the nature of he load will help supply engineers to appreciate that, in general, it is not a seriously difficult load. Methods of assessing demand are explained.

The booklet is obtainable for 1s from the B.E.A.M.A., 36, Kingsway, London, W.C.2.

Electricity Supply

Recent B.E.A. Contracts : Consultative Council Meetings

DURING the past month contracts have been placed by the British Electricity Authority for generating station, switching and transforming station and transmission equipment amounting in the aggregate to £3,477,614. The principal contracts include: boiler house coal handling plant, Barking "C" generating station (Fraser & Chalmers); 132 kV generator step-up transformers, Barking "C" (Hackbridge & Hewittic Electric Co.); structural steelwork, Deptford East, and structural steelwork, Carrington (Sir William Arrol & Co., Ltd.); superstructure of Prince Rock station, Plymouth (John Laing & Son, Ltd.); 66 kV switchgear extensions, Fulham (Metropolitan Vickers); demolitions and foundations for turbine and boiler house, West Ham "B" (Taylor Woodrow Construction, Ltd.); extension of station building, Rye House (Walker Lawrence & Son); civil engineering works, comprising jetty, wharf face, tunnels, seal pit and coal plant foundations, Blackwall Point (Peter Lind & Co.); reinforced concrete pile casting, Littlebrook "C" (Holloway Bros. (London), Ltd.); reconstruction of west end of Portobello station (W. & J. R. Watson); 132 kV 2,500 MVA switchgear, Staythorpe sub-station (General Electric Co.); 132 kV 2,500 MVA switchgear, Skelton Grange sub-station (British Thomson-Houston Co.); and 33 kV, 6.6 kV and multicore cables, Hartshead and Ashton-under-Lyne (W. T. Glover & Co.).

Electricity Output

According to the Ministry of Fuel and Power's weekly statement, 953.7 million kWh was sent out for public supply from solid-fuel-fired stations in the week ended 18th February. This was 72.4 million below the previous week's output but 6.8 million kWh more than in the week ended 20th February, 1948. Stocks of coal at electricity undertakings at 19th February last amounted to 3,362,500 tons.

Rural Plans

Mr. W. Gilchrist, chief commercial officer, Merseyside and North Wales Electricity Board, told the North Wales branch of the Rural District Councils' Association at Wrexham of the Board's plans for the electrification of 45,000 small dwellings in the area. When it was possible to go ahead with the scheme there would be a fixed scale of charges, so that it would cost £2 to bring electricity to a house of four rooms. For a house 100 yd from the supply mains the charge would be the same as for a house 5 yd away. The scheme would incur a loss unless all the people in rural areas took the supply for light, heating and cooking. The payment of the cost of wiring would be spread over a period of years. In some cases negotiations for wayleaves had been very protracted.

Wimbledon Cooling Towers

The British Electricity Authority has given formal notice of appeal to the Ministry of Town and Country Planning against the decision of the Wimbledon Council and the Surrey Town and Country Planning Committee in refusing permission for the erection of cooling towers and a coal store as the first stage in the reconstruction of the Durnsford Road generating station.

Yorkshire Restrictions Relaxed

At a meeting of the Electricity Committee of the East and West Ridings Regional Board for Industry in Leeds it was decided that staggered hours in both Ridings should end on 5th March. Mr. G. H. Bagnall, chairman, said that strict economy was still essential during the peak period of 8 to 9 a.m. Some form of load-spreading would again be necessary during the winter of 1949-50.

Moriston and Garry Projects

The latest constructional schemes of the North of Scotland Hydro-Electric Board—Moriston and Garry in Inverness-shire and Ross-shire—will make available an additional generating capacity of 96,000 kW, with an annual production of 384 million kW The schemes (Nos. 23 and 24) were confirmed by the Secretary of State for Scotland last Friday.

Between 1928 and 1938 four attempts were made to develop this area, but none of these met with the approval of Parliament. Most of the objections to the present scheme have been withdrawn; in the case of those still outstanding none of the objectors has asked for a public enquiry. The Board's projects differ considerably from the previous schemes, the most important changes being that the Garry scheme proposes to develop Loch Quoich to the east which is the natural course, and not towards Loch Hourn on the west coast, and that the amounts of compensation water for preser-

vation of fisheries and amenities are greatly in excess of those previously offered.

The Moriston scheme is the larger of the two, the estimated cost being £8,000,000. It provides for the raising of Loch Loyne by a dam 1,542ft long and 61ft high. The water caught here will be led by tunnel and pipeline to Loch Cluanie, the level of which will also be raised by a dam 2,015ft long and 108ft high at the point where the River Moriston flows out of the loch. On the lower reaches of the river two dams will be constructed. The largest of the five power stations (total capacity 56,000 kW) to be constructed on this scheme will be built at the mouth of the river Invermoriston.

Loch Quoich, the upper of the two big stretches of water concerned in the Garry project, is to be raised by a dam at its eastern end, 806ft long by 107ft high. A second dam 1,026ft long and 84ft high will be built at the eastern end of Loch Garry. To the east of each of these dams there will be a generating station with an installed capacity of 20,000 kW. This scheme is to cost approximately £4,850,000.

Scottish Power Costs

A memorandum on the estimated costs of supplies of hydro-electricity in Scotland has been submitted to the North of Scotland Hydro-Electricity Board by the Scottish Council (Development and Industry). Sir Steven Bilsland, chairman of the Executive Committee, states that the Council has had assurances from a number of firms that they would develop industrial projects in the Highlands if they could obtain electricity at a cost which would compare with the charges in other parts of the world.

Power Station Site

Barrow-in-Furness Corporation Plans Subcommittee has approved site plans submitted by the North Western Electricity Board for a new generating station at Roosecote Marsh.

South Shields Deficit

Operation of South Shields Town Council's electricity undertaking (now controlled by the North-Eastern Electricity Board) during 1947-48 resulted in a deficit of £13,292. There was a balance of £928 in the reserve fund to be transferred to the Electricity Board.

Progress of Erne Scheme

Good progress is being made with the Erne hydro-electric scheme of the Electricity Supply Board of Eire and it is hoped that one unit will be in operation early next year. Two generating stations are being built, one at Cliff, about three miles from Ballyshannon, and the other at Cathaleen's Fall, half a mile from the town. The dam and power house at Cliff are designed to develop the power of a 40ft fall in the river by the installation of two 10,000 kW units. At the Cathaleen's Fall site a dam 100ft high and 1,000ft long is being built and the generating station will have a designed capacity of 67,500 kW.

Electricity Consultative Councils

The Southern Electricity Consultative Council met for the first time on 23rd February, at Southern Electricity House, Maidenhead. The members were entertained to luncheon by the Southern Electricity Board, and afterwards they held their first meeting. The chairman, Major Sir Hubert Young, welcomed the members, who were then addressed by Mr. H. Nimmo and Mr. R. R. B. Brown, chairman and deputy chairman respectively of the Southern Electricity Board, and Mr. R. H. Coates, divisional controller, Southern Division, B.E.A. The Council resolved that the next meeting should be held on 27th April at Southern Electricity House, Maidenhead, and that representatives of the Press would be welcome at this and future meetings of the Council.

The Midland Electricity Consultative Council held its first meeting in Birmingham on 25th February. Alderman W. S. Lewis, chairman of the Midland Electricity Board, and Alderman H. Leason, Stoke-on-Trent, chairman of the Council, spoke.

Victorian Commission Chairman

The Government of Victoria is advertising the position of chairman of the State Electricity Commission, in succession to Mr. G. G. Jobbins, M.I.E.E., who is retiirng after holding the position for many years. A seven-year contract is offered in the first instance with a salary of £A3,000 a year, but the Government proposes to amend the Commission's Act to provide for a maximum of £A6,000. The chairman is the executive head of the undertaking, the other three Commissioners serving on a part-time basis. At present the system has an installed generating capacity of 454,000 kW, but it is planned to raise this to over 900,000 kW in the next decade. Further details are given in an advertisement in this issue.

Appliances in Council Houses

Consett (Durham) U.D.C. has expressed concern at the number of tenants in Council houses installing additional electrical devices, which the wiring systems of the houses were not designed to carry. Tenants have been told that in future prior permission should be obtained from the Council before more equipment is installed.

FINANCIAL SECTION

Company News
Stock Exchange Activities

Reports and Dividends

The English Electric Co., Ltd., in a preliminary statement, reports a profit for the year ended 25th December last of £535,027, as compared with £273,584 for 1947. In the 1948 accounts the company has appropriated net dividends from the available profits, which are arrived at after charging income tax on those dividends. For purposes of comparison the 1947 figures have been adjusted. The final dividend on the ordinary stock is 6 per cent, actual, less tax, making 10 per cent for the year, less tax (unchanged). The annual meeting will be held on 30th March.

Marconi's Wireless Telegraph Co., Ltd., reports a profit for 1948 of £132,726, as compared with £91,162 for 1947. The dividend for the year is maintained at 7 per cent, less tax.

Marconi International Marine Communication Co., Ltd., shows a profit of £58,327 for 1948, as compared with £50,010 for 1947. The final dividend is 5 per cent, less tax, again making 7½ per cent for the year.

Mather & Platt, Ltd., report a net profit for 1948, after transferring £250,000 to the stock-in-trade contingency reserve, of £137,393, as compared with £190,475 for the preceding year. It is proposed to pay a final dividend of 7 per cent (same), maintaining the distribution for the year at 11 per cent. The balance carried forward is £128,661 (against £84,679 brought in).

Bruce Peebles & Co., Ltd., report a profit for 1948, after taxation, depreciation and adding previous taxation provisions not now required, of £83,922. Reserves receive £70,000, and the preference shares again receive a further 2½ per cent, making 10 per cent. The ordinary dividend is 10 per cent (against a dividend of 5 per cent and a bonus of 5 per cent).

J. & E. Hall, Ltd., report a trading profit for the year ended 30th September last of £369,718, as compared with £280,645 for the previous year, and a net profit of £90,051 (against £66,699). The dividend for the year is maintained at 10 per cent by a final payment of 7½ per cent, and the balance carried forward is £211,982 (against £162,851 brought in).

Switchgear & Cowans, Ltd., are offering to shareholders registered on 16th February 120,009 5s shares at 14s each in the proportion of one share for every four held. The proceeds, which are estimated at £80,500, will be used for additional working capital, and when circumstances permit, to purchase land and buildings adjacent to the company's works at Old Trafford. The directors state that the profits for 1949 should be higher than 1948 and should be sufficient to provide for a dividend of not less than 20 per cent on the increased capital.

A. F. Bulgin & Co., Ltd., report a net profit, before tax, for the period of one year and twelve days to 31st January last, of £49,327. It has been decided to pay a dividend for the period of 27½ per cent, less tax.

Cable & Wireless, Ltd.—The arbitration tribunal has now determined the value for compensation purposes of Cable & Wireless, Ltd., the operating company, which was nationalized on 1st January, 1947. The figure is £35,250,000. The Treasury was holder, prior to vesting date, of 2,600,000 of the 30,000,000 issued shares in the company, and the total amount now payable to the companies forming part of the Cable & Wireless (Holding) Group, in respect of their holdings is £32,195,000. The award is equal to a value of 23s 6d per share of the operating company.

Morphy-Richards, Ltd., are paying an interim dividend of 60 per cent. No interim was paid in the previous year, but the total distribution for the year was 160 per cent.

The Direct Spanish Telegraph Co., Ltd., is paying a dividend for the year of 4½ per cent (unchanged).

The Ransome & Marles Bearing Co., Ltd., is paying an unchanged interim dividend of 7½ per cent.

The Electrolytic Zinc Co. of Australasia has declared an interim dividend of 7 per cent (against 6 per cent).

The Oriental Telephone & Electric Co., Ltd., is again paying an interim dividend of 4 per cent.

New Companies

David McClure, Ltd.—Registered 22nd February. Capital £20,000. To acquire the business of an electrical engineer, carried on by D. McClure at Mersey Dynamo Works, Range Road, Adswood, Stockport, as D. McClure. Directors: D. McClure, J. K. Spencer and L. H. Watkins. Regd. office: Mersey Dynamo Works, Range Road, Adswood, Stockport.

Aero Transformers, Ltd. — Registered 22nd February. Capital £1,500. To acquire the business of an electrical component manufacturer carried on by Gertrude F. H. Dorsett at Cricklewood, N.W.2. Directors: Mrs. Gertrude F. H. Dorsett and G. R. Win-

ram. Regd. office: 1, Elm Terrace, Hermitage Lane, N.W.2.

Harry Carr, Ltd.—Registered 23rd February. Capital £5,000. To acquire the business of an electrical, radio and refrigerating engineer carried on by H. Carr at West St. Mary's Gate, Grimsby. Directors: H. Carr, Emily E. Carr and F. Wattam. Regd. office: 10, West St. Mary's Gate, Grimsby.

R. Davidson, Ltd.—Registered 22nd February. Capital £7,500. Electrical contractors and illuminating engineers, manufacturers of and dealers in electrical and radio equipment, etc. Directors: R. Davidson, address not stated; and E. K. F. Swayne, 13, High Street, Godalming.

Williams Brothers (Luton), Ltd.—Registered 19th February. Capital £2,000. Wholesale or retail factors of electrical apparatus, wireless apparatus, etc. Directors: K. Pierson and H. M. Henshell. Solicitors: Waltons, 33, King Street, Luton.

"Brun" Alarms, Ltd.—Registered 18th February. Capital £500. Electrical and mechanical engineers, manufacturers of and dealers in electric low voltage resistance welding plant and equipment, etc. Directors: M. Farber and P. Farber. Regd. office: 90, Oldham Street, Manchester.

Liquidations

Electro Developments (Leicester), Ltd.—Winding up voluntarily. Liquidator, Mr. R. A. Haigh, Court Chambers, Friar Lane, Leicester.

East British Electric Co., Ltd.—Winding up voluntarily. Liquidator, Mr. W. English, 211, Lower Addiscombe Road, Croydon.

International Radio & Electric Holdings, Ltd.—Members' voluntary liquidation. Members' meeting on 29th March, at 35, Clarges Street, Piccadilly, London, W.1, to receive an account of the winding-up by the liquidator, Mr. G. R. MacKay.

Bankruptcies

L. C. Overton, King Street, Bakewell, Derbyshire, electrician.—First meeting held 2nd March. Public examination 15th March, at the Court House, 20, St. Peter's Church Yard, Derby.

R. L. Newell, trading as R. & R. Newell, High Bank Mill, Egremont, Cumberland, electrical engineer.—Last day for receiving proofs for dividend 12th March. Trustee, Mr. T. B. Harston, 14, Lowther Street, Carlisle, Official Receiver.

R. H. Tuck, 7, Grand Parade, Upper Richmond Road, London, S.W.14, electrical engineer, and lately carrying on business with another as London Electrical Contractors, at 109, Great Russell Street, W.C.1, and at 9, Newman Street, W.1, and also lately carrying on business with another as Brotherton & Tuck, at 9, Newman Street, W.1.—Last day for receiving proofs for dividend 14th March. Trustee, Mr. W. F. Cresswell, Bankruptcy Buildings, Carey Street, London, W.C.2, Senior Official Receiver.

R. Hampson, Yew Tree Bungalow, Hall i'th'Wood, Astely Bridge, Bolton, Lancs, electrical engineer, and lately trading with A. Mearns as the Northern Supply Co., at 28, Victoria Square, Bolton, as electrical engineers. — Adjudication order dated 8th June, 1926, annulled and receiving order dated 8th June, 1926, rescinded on the grounds that debts, together with 4 per cent statutory interest, have been discharged in full.

Trade Marks

APPLICATIONS have been made for the registration of the following trade marks. Objections may be entered within a month of 23rd February.

S. (design).—No. 657,040. Class 9. Electric switches, combined electric switch and fuse units, electric distribution fuseboards, electric switchboards (complete), etc.—Wm. Sanders & Co. (Wednesbury), Ltd., Falcon Electrical Works, Ridding Lane, Wednesbury, Staffs.

ETRONIC RADIO (design).—No. 659,168. Class 9. Wireless and television instruments, and parts thereof included in Class 9.—Hale Electric Co., Ltd., Radio Works, Talbot Road, West Ealing, London, W.13.

ENALON.—No. 669,228. Class 9. Electrical apparatus and instruments included in Class 9, scientific apparatus and instruments and wireless sets (complete), and parts of all such goods included in Class 9.—Engineering & Allied Manufacturing Co., Ltd., 12, Westbourne Street, Lancaster Gate, London, W.2.

VISCONOL.—No. 669,358. Class 9. Electric capacitors (condensers).—The Telegraph Condenser Co., Ltd., Wales Farm Road, North Acton, London, W.3.

LYTEX.—No. 669,999. Class 9. Electric batteries.—Electrical & Car Services (Luton), Ltd., 144, Old Bedford Road, Luton, Beds.

BIOSOL.—No. 666,921. Class 10. Electromedical apparatus and parts thereof and fittings therefor, all included in Class 10.—Philips Electrical, Ltd., Century House, Shaftesbury Avenue, London, W.C.2.

ELKEM.—No. 668,661.—Class 11. Furnaces (other than experimental furnaces) and parts thereof included in Class 11.—Elektrokemisk A/S, Oslo, Norway. Address for service, c/o Kilburn & Strode, 31-33, High Holborn, W.C.1.

DEBONAIR.—No. 668,795. Class 11. Installations for lighting and fluorescent lighting fittings.—Eric Alfred Dubois, Parkside, North Street, Romford, Essex.

HOTENTOT.—No. 669,670. Class 11. Electric water heaters.—Hotentot Industries, Ltd., 9, Rumford Street, Liverpool, 2.

EGA (design).—No. 668,360. Class 20. Tubing for electric conduits and junction fittings for such tubing, all made of plastics.—Electrical & General Accessories (Leicester), Ltd., Holyhead Road, Wednesbury, Staffs.

STOCKS and SHARES

THE outstanding Stock Exchange feature of the present week has been a substantial rise in the ordinary stock of Cable & Wireless. This time last month the price was 215; it is now 240, the improvement being due, of course, to the Arbitration Tribunal's award in respect of the value, for compensation purposes, of Cable & Wireless Operating, nationalized two years ago. The value has been determined as £35,250,000. Cable & Wireless Operating is owned by nine companies forming a group in which Cable & Wireless (Holding) is the principal shareholder. While many minor points have yet to be settled, the price of Cable ordinary stock at 240 is is regarded as being not unduly high.

Public investment is also largely interested in the 3½ per cent preference stock of the Eastern Telegraph Company, and, on the anticipation of the stock receiving substantial compensation, the price rose from 110 to 126. There has been a lot of talk about "break up values," but as Cable & Wireless is certainly not likely to break up, the estimates which are being made on this account have little interest other than purely academic. The amount awarded by the Tribunal is considered quite satisfactory, as the sharp advances in price quotations demonstrate.

The Ebbing Tide

There is a Stock Exchange saying to the effect that markets occasionally become so quiet that one can hear the prices falling. At the present time, business is reduced to negligible proportions. There is not enough of it to go round. In these circumstances, prices inevitably give way, and, as compared with a month ago, it will be noticed from our lists of changes that the falls greatly outnumber the rises. Money is shy of seeking Stock Exchange channels for its employment under existing political conditions. Some people think that after the Budget there may be an all-round revival of interest in Stock Exchange securities.

Electrical Equipment Shares

Some weakening of confidence in home industrials has been perceptible in the electrical equipment market, in the form of another general recession of prices, with an accompanying increase in the supply of stock. Crompton Parkinsons, for instance, are down 2s 6d on the month at 26s, which gives a yield of £4 6s 6d per cent. B.I.C., offered at 33s 6d, can also be bought on better terms than have prevailed lately, the return now being practically 4 per cent. Among the higher yielders, a line of Electrical Components 5s ordinary has been offered at 12s in advance of the interim dividend: the return on last year's total of 20 per cent is £8 6s 8d per cent. In the preference lists, a substantial block of Sterling Electric redeemable 4½ per cent shares came on offer at 20s 4½d.

English Electric

English Electric's preliminary figures for 1948 augur well for the electrical engineering companies' part in the main season of reports and dividends now opening. Net profits have risen by more than a quarter of a million, to a total of £535,000, despite an additional £150,000 this time for depreciation. A final of 6 per cent brings the year's dividend to the usual 10 per cent, on which the shares at 47s 6d yield £4 4s 3d per cent. The results justified everything the market expects from a leader in one of the most favoured sections of the Stock Exchange. Marconi's Wireless, Marconi Marine and D. Napier, all controlled by English Electric, also report higher profits and maintained dividends.

Decca Notes

The Decca Record Co.'s issue of £750,000 4½ per cent unsecured notes at par was but partly subscribed by the public and dealings started at a discount. The notes are redeemable at 102 between 1959 and 1964, or at 102½ during the preceding five years. This issue has the object of reducing substantial Bank loans, and of providing adequate working capital. According to the prospectus, interest on the notes is covered rather less than three times by the average profits of the last ten years. The 1s ordinary shares of the company have lately eased from 20s to 17s. The Decca Navigator subsidiary is apparently not yet contributing to the group's revenue.

Switchgear & Cowans Capital

Switchgear & Cowans new 5s shares, offered to shareholders on a one-for-four basis, are being dealt in at 1s 9d premium on the issue price of 14s. The old shares at 16s 6d ex-rights have lost about 9d net. Shareholders are advised by the company that the 1948 profits are estimated provisionally to be at least equal to the previous year's. All being well, the current year's earnings should cover, with a prudent margin, a dividend of not less than 20 per cent on the increased capital of £150,000. Excluding the first years of the war, and an unprofitable transition year in 1946, dividends of 20 per cent have been paid since the company was made public in 1936. At the ex-rights price of 16s 6d the shares pay £6 1s 3d per cent on that basis.

Electrical Investments

Past Month's Price Changes

Company	Dividend Previous	Dividend Last	Middle Price 28th Feb 1949	Month's Rise or Fall	Yield £ s. d. p.c.
Overseas Electricity Companies					
Atlas Elec. ...	Nil	2	14/–	—3d.	2 17 2
Calcutta Elec. ...	6†	6†	31/–	—1/6	3 17 5
Cawnpore Elec. ...	13	13	35/–	—½	7 8 8
East African Power	7	7	43/9	—2/9	3 4 0
Jerusalem Elec. ...	5	6	23/–	+6d	—
Madras Elec. ...	8	5	29/6	—1/9	3 7 10
Nigerian Elec. ...	12½	10	35/6	—1/–	5 14 3
Palestine Elec. "A"	7†	Nil	34/6	—6d	—
Perak Hydro-elec.	Nil	Nil	13/–	—6d.	—
Whitehall Inv. Pref.	—	6	26/–	+6d.	4 12 4
Equipment and Manufacturing					
Aberdare Cable ...	10	15	63/–	—4/–	4 15 3
Aron Elec. Ord. ...	15	15	48/9	—⅛	6 3 0
Assoc. Elec. Ord. ...	15	15	77/6	—2/3	—
Automatic Tel. & El.	12½	12½	65/–	+6d.	3 17 0
Babcock & Wilcox	15	15	74/–	—6d.	4 1 1
Baldwin, H. J. (2/–)	25	25	8/9	...	5 14 3
British Aluminium	10	10	50/9	—6d.	3 18 9
B.I. Callender's ...	6¾	6¾	33/–	—2/–	4 0 6
British Thermostat (5/–)	23½	23½	27/6	...	4 5 6
British Vac. Cleaner (5/–)	20	20	11/–	—1/–	9 1 10
Brush Ord. (5/–) ...	—	—	6/9	—6d.	—
Burco (5/–) ...	35	35	22/6	—⅛	7 15 6
Chloride El. Storage	20	20	5	—⅛	4 0 0
Cole, E. K. (5/–) ...	20	22½	17/–	+1/6	—
Cossor, A. C. (5/–)...	25	Nil	9/6	—1/6	—
Crabtree (10/–) ...	17½	17½	41/–	—1/–	4 5 4
Crompton Parkinson Ord. (5/–) ...	22½	22½	26/0	—2/6	4 6 6
De La Rue (5/–) ...	50	50	38/3	—1/9	6 10 10
Decca (1/–) ...	112½	112½	17/–	—4/–	6 12 4
E.M.I. (10/–) ...	6	8	18/3	—1/9	4 7 8
Electrical Components (5/–) ...	20	20	12/6	...	8 0 0
Elec. Construction	12½	12½	55/–	+⅛	4 11 0
Enfield Cable Ord.	7½	7½	36/–	...	4 3 4
English Electric ...	10	10	47/6	—⅛	4 4 3
Ericsson Tel. (5/–)...	20†	20†	43/9	—⅛	2 5 8
Ever Ready (5/–)...	40	40	38/6	+3d.	5 4 0
Falk Stadelmann...	10	15	46/3	+⅛	6 9 8
G.E.C. Ord. ...	17½	17½	89/6	—1/9	3 18 2
General Cables (5/–)	50	50	35/–	—¼	7 2 10
Greenwood & Batley	15	15	53/3	+9d.	5 12 9
Hackbridge Cable (5/–)	—	20(est.)	15/6	—9d.	—
Hackbridge Hewittic (5/–)	6	12	11/9	+3d.	5 2 2
Hall's Tel. Acc. (10/–)	10	10	13/3	...	7 11 0
Heatrae (2/–) ...	12½	12½	5/–	...	5 0 0
Henley's (5/–) ...	20	20	25/6	—6d.	3 18 6
Hoover (5/–) ...	40	40	37/6	...	5 10 2
Intl. Combustion (5/–)	37½	37½	45/0	—2/6	4 3 4
Johnson & Phillips	15	15	73/6	+½	4 1 9

Company	Dividend Previous	Dividend Last	Middle Price 23th Feb 1949	Month's Rise or Fall	Yield £ s. d. p.c.
Equipment and Manufacturing (Continued)					
Lancashire Dynamo	22½	22½	5⅞	+1/16	4 2 9
Laurence, Scott (5/–)	12½	12½	15/–	...	4 3 4
London Elec. Wire	10	10	48/9	+6d.	4 2 0
J. Lucas	17½	17½	90/–	+5/.	3 17 9
Mather & Platt ...	11	11	53/9	—6d.	4
Metal Industries (B)	10	10	47/–	+2/–	4 5 1
Mid. Elec. Mfg. ...	35	35	8½	...	4 5 0
Murex	20	20	97/6	—¼	4 2 0
Newman Ind. (2/–)	22½	22½	6/3	—6d.	7 4 0
Oldham & Son (1/–)	60	60	10/9	—3d.	5 11 7
Plessey (5/–) ...	30	20	18/6	+1/–	5 8 1
Parsons C. A. ...	12½	12½	63/3	+⅛	3 19 1
Pye Deferred (5/–)	25	25	32/6	+⅛	3 17 0
Radio & Tel. (2/–)	40	25	6/–	—6d.	8 6 8
Revo (10/–) ...	27½	27½	58/3	—2/6	4 14 6
Reyrolle	12½	12½	61/3	—⅛	4 1 7
Scophony (5/–) ...	—	—	3/–	—6d.	—
Scot. Cable (4/–) ...	30	30	25/0	—3d.	4 16 0
Siemens Ord. ...	7½	7½	36/–	+6d.	4 3 4
Switchgear & Cowans (5/–)	10	20	16/6×r	—9d.	6 1 3
T.C.C. (10/–) ...	15	15	32/6	...	4 12 4
T.C. & M.	10	10	50/6	+1/–	3 19 4
Telephone Mfg. (5/–)	9	9	10/6	+3d.	4 5 9
Thorn Elec. (5/–) ...	25	25	20/–	...	6 5 0
Tube Investments...	25	25	6½	—¼	3 17 0
Vactric (5/–) ...	Nil	Nil	16 3	—9d.	—
Veritys (5/–) ...	2½	5	4/9	—3d.	5 5 3
Walsall Conduits (4/–)	70	70	60/9	+⅛	4 12 1
Ward & Goldstone (5/–)	50	50	59/6	+1/–	4 3 0
Watford (2/–) ...	15	15	6/–	+3d.	5 0 0
Westinghouse Brake	14	14	70/–	+⅛	4 0 0
West, Allen (5/–) ...	10	10	11/–	...	4 11 0
Transport and Communications					
Anglo-Am. Tel.:					
Pref.	6	5⅝	120½	—2	—
Def.	1½	1½*	26½	+4	—
Anglo-Portuguese...	8	8	29/6	—6d.	5 8 6
Brit. Elec. Traction:					
Def. Ord. ...	50	50	1905	+10	2 12 4
Calcutta Trams ...	10	Nil	29/–	+6d.	—
Cape Elec. Trams...	6	6	25/–	—2/6	4 16 0
Cable & Wireless:					
5½ Pref.	5½	5½	125½	—4	4 7 8
Ord.	4	4	240½	+25	—
Globe Tel. & Tel. Ord.	5†	5†	48/–	—6d.	2 1 8
Great Northern Tel. (£10)	15	12	19½	+1	6 3 –
Inter. Tel. & Tel....	Nil	Nil	14	—2	—
Marconi-Marine ...	7½	7½	31/–	—6d.	4 16 9
Oriental Tel. Ord....	10	16	51/3	—2/9	6 5 0
Telephone Props. ...	6	6	15/–	—2/6	8 0 0
Tele. Rentals (5/–)	10	10	10/9	—3d.	4 13 0

* Dividend postponed.

† Dividends are paid free of Income Tax.

Emergency Airport Plant

THE suitability of automatic standby plant for use in the event of failure of the mains supplies to aerodromes has been investigated by International Aeradio, Ltd., which operates air traffic control, radio navigational aids and communications at many aerodromes throughout the world. The need is for an automatic generator designed to take up the load in the minimum of time.

One of the large number of Lister Met-Vick 20 kVA plants in use at the company's stations was selected for experiment at the company's Technical Department at Bovingdon Airport, Hertfordshire. Results so far indicate that the use of the new Plessey industrial type cartridge starter is most suitable for the quick starting of these engines and is simple to attach to existing plant. The starting handle with its mounting bracket is removed from the bedplate and the cartridge starter fixed on a bracket in its place. The only other fitting to the engine is an electrical solenoid, which is attached to the fuel oil pump governor bar and is used purely for stopping the plant when worked in conjunction with the automatic switchboard.

Failure of the mains voltage causes a contactor to drop out of circuit and, at the same time, to energize a local circuit to fire the cartridge in the starter. The engine starts and, when up to correct speed, another contactor connects the load. The two main contactors are electrically and mechanically interlocked. With a four-cylinder Lister engine, it has been found possible to apply the full load in a time not greater than seven seconds after the failure of the mains voltage even on cold winter days.

Restoration of the mains voltage causes the diesel set contactor to come out and the mains contactor to return into circuit. The diesel engine is kept going for a period of about one minute in case the mains should momentarily fail again, as sometimes happens. After this interval of time, the diesel plant is automatically brought to a standstill and the second starting cartridge is electrically moved into position on the starter ready for the next operation.

The starter has a magazine for five cartridges and, should the engine not start on the firing of the first cartridge, the second cartridge is brought into use automatically after a period of about ten seconds. If this fails, all the automatic equipment comes out of circuit, giving audible and visual warning that the plant has failed to start. Failure of oil pressure and excessive water temperature will also close the plant down and give the necessary warning. International Aeradio, Ltd., has had this plant in operation for the past six months without a single failure of the engine to start and to take the load in less than seven seconds.

As a number of these plants will be required to operate in tropical climates, the company considers that the absence of large starting accumulators is an advantage.

Argentine Exchange Controls

THE Argentine Central Bank has announced new import regulations governing goods, either in transit to or already in Argentine ports, which are not covered by prior exchange permits. Import permits must be applied for before 21st March. Applicants must state whether the goods were in or on their way to Argentine ports on 10th February.

Such applications as are granted will be subject to the prior payment of a surcharge of 30 per cent of c.i.f. value in the case of preferential cargoes and 50 per cent for all other goods, with payment in Argentine currency. Import permits will be valid for 30 days in the case of goods in port and 60 days for those in transit. Permits will be authorized without the use of foreign exchange, thus "despatch certificates will not be cashed on the official market nor in the free exchange market." Present holders of prior exchange permits are to submit them for renewal before 10th March, otherwise they will become invalid. In the case of unrenewed permits, an extension of a month from the original authorization date will be allowed on payment of a charge of 20 per cent.—*Reuter* (Buenos Aires).

Electric Power for Brazzaville

A NEW corporation, the French Equatorial African Power Co., has been set up in Brazzaville to produce electric power and thereby attract new industries to the French Middle Congo. At present, power for the Brazzaville region is obtained from the Belgian Congo. The company is to build a dam on the Djoue or Fukulari rivers.—*Reuter.*

Next Week's Events

Monday, 7th March

BIRMINGHAM.—James Watt Memorial Institute, 6 p.m. I.E.E. South Midland Centre. "Visual Methods in Engineering Teaching," by H. E. Dance.

LEEDS.—Great Northern Hotel, 7.30 p.m. A.S.E.E. Leeds Branch. "Phenolic Plastics and their Applications," by F. Cass.

LIVERPOOL. — Royal Institution, Colquitt Street, 6.30 p.m. I.E.E. Mersey and North Wales Centre. "Tidal Power and the Severn Barrage," by H. Headland.

MANCHESTER.—At the Manchester Geographical Society, 16, St. Mary's Parsonage, 7 p.m. Junior Institution of Engineers, North-Western Section. "Specialized Production of Alkyds for the Electrical Industry," by A. R. Dunton.

NEWCASTLE-ON-TYNE.—King's College, 6.15 p.m. I.E.E. North-Eastern Radio and Measurements Group. "Induction Disc Motors for Relays and Instruments," by W. Gray.

SHEFFIELD.—Royal Victoria Hotel, 7.30 p.m. A.S.E.E. Sheffield Branch. "Electrical Problems and Adaptations," by J. C. Burkhard.

Tuesday, 8th March

BELFAST.—Queen's University, 6.45 p.m. I.E.E. Northern Ireland Centre. "The Flash Tube and its Applications," by Dr. J. N. Aldington and A. J. Meadowcroft.

CAMBRIDGE.—Cavendish Laboratory, 8.15 p.m. I.E.E. Cambridge Radio Group. "Electronic Calculating Machines," by Prof. D. R. Hartree.

HUDDERSFIELD.—Yorkshire Electricity Board Offices, 6.30 p.m. I.E.E. North Midland Centre. "Centralized Ripple Control on High-Voltage Networks," by T. W. Ross and R. M. A. Smith.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Measurements Section. "The Development of Q-meter Methods of Impedance Measurement," by Dr. A. J. Biggs and Dr. J. E. Houldin. (Joint meeting with Radio Section.)

Lighting Service Bureau, 2, Savoy Hill, W.C.2, 6 p.m. Illuminating Engineering Society. "The Colour of Fluorescent Lamps," by W. Harrison.

Kingsway Hall, W.C.2, 7.15 p.m. E.P.E.A. London Technical Group. "Power Station Handling Equipment," by B. Johnson.

LUTON.—Assembly Room, Town Hall, 7.30 p.m. Luton Electrical Society. "Gas Turbines. Why, What and Whither?" by D. H. Mallison.

MANCHESTER.—Midland Hotel, 7.15 p.m. I.E.E. North-Western Centre. Annual dinner and visit of President.

WIMBLEDON. — Compton Hall, 8.15 p.m. A.S.E.E. South-West London Branch. "Atomic Energy," by Dr. L. E. C. Hughes.

Wednesday, 9th March

ABERDEEN.—Caledonian Hotel, 7.30 p.m. I.E.E. North-East Scotland Sub-Centre. "Local Line Plant for Telecommunications," by R. C. Birnie.

BIRMINGHAM.—Chamber of Commerce, 7 p.m. A.S.E.E. Birmingham Branch. "Estimating for Electrical Contracting," by W. H. Brooks.

BRADFORD. — Midland Hotel, 7.30 p.m. A.S.E.E. "Electrical Apparatus in the Modern Hospital," by L. L. Emmett.

EDINBURGH.—Heriot-Watt College, 7 p.m. I.E.E. Scottish Centre. "The Lightning Protection of High-Voltage Overhead Transmission and Distribution Systems," by H. M. Lacey.

FAREHAM.—At H.M.S. "Collingwood," 5.45 p.m.—I.E.E. Southern Centre. "Aids to Training—The Design of Radar Synthetic Training Devices for the R.A.F.," by G. W. A. Dummer.

LIVERPOOL.—City Technical College, 7.30 p.m. Institute of Marine Engineers. "Air Conditioning for Ships," by J. K. W. Macvicar.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Supply Section. "Some Notes on the Design of High-Voltage Transmission Lines, with special reference to Conditions in India and Pakistan," by A. F. Coventry.

I.E.E. London Students' Section, 2 p.m. Visit to Ford Motor Co., Dagenham.

Connaught Rooms, W.C.2, 12.45 for 1.15 p.m. British Refrigeration Association. Annual luncheon.

Thursday, 10th March

BIRMINGHAM.—James Watt Memorial Institute, 6.45 p.m. I.E.E. South Midland Students' Section. "Power Stations, Past and Present," by F. W. Lawton.

DUNDEE.—Royal Hotel, Union Street, 7. p.m. I.E.E. North-East Scotland Sub-Centre. "Local Line Plant for Telecommunications," by R. C. Birnie.

GLASGOW.—Electrical Society of Glasgow. Visit to the works of British National Electrics, Newarthill.

LEWISHAM.—S.E. London Technical College, 8 p.m. A.S.E.E. South-East London Branch. "The X-ray Engineer," by W. E. L. Gladwish.

LONDON.—Savoy Place, W.C.2, 5.30 p.m. I.E.E. Utilization Section. "The Automatic Control of Lead-Acid Battery Charging Equipment," by R. A. Harvey.

SWANSEA.—Osborne Hotel, Langland, 4 p.m. I.E.E. West Wales (Swansea) Sub-Centre. "Communication over High Tension Networks," by W. B. Warren. 6.30 p.m. Annual dinner.

Friday, 11th March

BRISTOL.—Grand Hotel, 7.30 p.m. A.S.E.E. Bristol Branch. "Electric Soil Warming," by W. Cover.

LONDON.—Savoy Place, W.C.2, 6 p.m. I.E.E. Education Discussion Circle. Discussion on "The Application of Flux Meters to Experiments on Electric Machines," opened by Prof. E. B. Moullin.

Caxton Hall, S.W.1, 6.30 p.m. E.P.E.A. (Southern Meter Engineers' Group). "Ticonal Magnets," by A. J. Tyrrell.

MANCHESTER.—Grand Hotel. Manchester Association of Engineers. Annual dinner.

NOTTINGHAM.—Victoria Station Hotel. I.E.E. East Midland Centre. Annual dinner and visit of President.

Saturday, 12th March

LONDON.—I.E.E. London Students' Section, 10.30 a.m. Visit to Windmill Theatre, W.1.

NEW PATENTS

Electrical Specifications Recently Published

The numbers under which the specifications will be printed and abridged are given in parentheses. Copies of any specification (2s. each) may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2.

1942

METROPOLITAN-VICKERS Electrical Co., Ltd., and A. Tustin.—"Electric motor devices." 12621. 5th September, 1942. (Cognate application 17484/42.) (617591.)

1943

Sperry Gyroscope Co., Inc.—"Detection or viewing of objects by the use of reflected waves." 20288. 7th December, 1942. (617592.)

1944

Armour Research Foundation. "Methods of magnetically recording fluctuating electrical energy, and magnetic recorders for recording electrical energy vibrations." 6847. 22nd December, 1941. (617773.)

1945

Patelhold Patentverwertungs-&-Elektro-Holding Akt.-Ges. "Electric transducers." 3611. 25th February, 1944. (617870.)

Compagnie Générale de Telegraphie Sans Fil.—"Processes and apparatus for high-frequency surface hardening of steels." 5825. 17th November, 1941. (617593.)

Soc. Civile d'Etudes Thermo-Mecaniques.—"Power generating systems." 9498. 16th October, 1942. (617871.)

Marconi's Wireless Telegraph Co., Ltd.—"Automatic control system suitable for use in the focusing of television pick-up tubes." 10449. 25th April, 1944. (617872.)

Marconi's Wireless Telegraph Co., Ltd.—"Electron-discharge device and associated resonator circuits for use at high frequencies." 19534. 29th July, 1944. (Addition to 617332.) (617599.)

G. W. Watson.—"Electrical vaporization of liquids." 24557. 21st September, 1945. (617877.)

Philco Radio & Television Corporation.—"Capacitor discharge and like circuits." 24821. 27th September, 1944. (617878.)

M-O Valve Co., Ltd., and R. O. Jenkins.—"Thermionic cathodes." 25429. 1st October. 1945. (617879.)

L. Cohen.—"Radio receiving system." 27509. 19th, October, 1945. (617880.)

R. J. McNitt.—"Electrolysis of fused baths." 29839. 8th November, 1945. (617885.) "Method of operating fused bath electrolytic cells. 29840. 8th November, 1945. (617886.)

Soc. Anon des Usines Chausson.—"Apparatus for applying pressure to the hydraulic installations of hydraulically controlled electric welding and other machine tools." 30005. 23rd November, 1944. (617887.)

J. F. Novy.—"Radio location and identification system." 32144. 23rd September, 1944. (617737.)

H. F. Maddox.—"Radio navigational aiding systems." 32390. 30th November, 1945. (617681.)

1946

Raytheon Manufacturing Co.—"Electron-discharge tubes." 2361. 10th February, 1945. (617509.)

Concordia Electric Safety Lamp Co., Ltd., and H. Lucas.—"Electric lamps." 3186. 31st January, 1946. (617893.)

Standard Telephones & Cables, Ltd.—"Radiolocation system." 3265. 24th February, 1945. (617511.)

Brush Development Co.—"Piezoelectric devices." 3708. 7th February, 1945. (Addition to 575068.) (617611.)

Submarine Signal Co.—"Electric phase-delay compensators." 5139. 5th December, 1940. (617899.)

General Electric Co., Ltd., and L. I. Farren.—"Electric phase-discriminator circuit arrangements." 9662. 28th March, 1946. (617614.)

Nesco Products, Ltd., and J. G. Carter.—"Magnets for moving-coil loudspeakers and microphones." 10530. 5th April, 1946. (617906.)

F. L. Broussouse.—"Control devices for electric motors." 11800. 28th May, 1945. (Cognate applications 11801/46 and 11802/46.) (617617.)

Philips Lamps, Ltd.—"Vacuum vessels such as electric-discharge tubes." 12988. 1st May, 1945. (617517.)

Standard Telephones & Cables, Ltd., and R. F. Cleaver.—"Electric resistance potentiometers." 15355. 21st May, 1946. (617622.)

General Electric Co., Ltd., J. J. E. Aspin, and E. S. Harris.—"Tuning systems for radio receivers or transmitters." 16004. 27th May, 1946. (617913.)

A. Pipponzi.—"Electric circuit-breakers." 16260. 24th May, 1945. (617625.)

Standard Telephones & Cables, Ltd., H. Wolfson, and B. Thomson.—"Silver plating." 18557. 20th June, 1946. (617786.)

Marconi's Wireless Telegraph Co., Ltd.—"Electrical filter networks." 18749. 21st June, 1945. (617787.)

Submarine Signal Co.—"Automatic control circuits." 19351. 20th November, 1943. (617918.)

Naamlooze Vennootschap Philips' Gloeilampenfabrieken.—"Radio-altimeters and like distance meters." 19387. 10th June, 1942. (617628.)

Western Electric Co., Inc.—"Variable attenuator." 19409. 4th July, 1945. (617919.)

Naamlooze Vennootschap Philips' Gloeilampenfabrieken—"Electric pianos." 20004. 15th July, 1942. (617629.)

Standard Telephones & Cables, Ltd., and M. F. Wintle.—"Thermionic valve wave translating circuits." 20236. 6th July, 1946. (617630.)

Philips Lamps, Ltd.—"Methods of connecting current supply wires to the ends of rod-like electrical components. 20343. 15th June, 1945. (617921.)

Metropolitan-Vickers Electrical Co., Ltd., G. Shand, and A. Baugh.—"Thermionic valve control circuits." 9th July, 1946. (617788.)

E. K. Cole, Ltd., and W. J. C. Jackson.—"Electric heat radiators." 21062 28th July, 1947. (617524.)

G. H. Scholes & Co., Ltd., G. H. Scholes and E. J. Pearce.—"Electric fuses." 21216. 16th July, 1946. (617924.)

Farnsworth Television & Radio Corporation.—"Antenna for radiating circularly polarized waves. 21819. 3rd Oct., 1945. (617925.)

Philips Lamps, Ltd.—"Electric-discharge tube." 22004. 11th February, 1943. (617926.)

Holophane, Ltd., and J. G. Holmes.—"Street lighting system and lamps therefore." 22192. 25th July, 1946. (617927.)

Western Electric Co., Inc.—"Telephone switching systems. 23000. 14th August, 1945. (617932.)

Philips Lamps, Ltd.—"Electric contact devices." 24005. 11th November, 1942. (617793.)

British Thomson-Houston Co., Ltd., and D. H. Graham.—"Dynamo-electric machines." 24659. 19th August, 1946. (617935.)

Metropolitan-Vickers Electrical Co., Ltd., and C. W. Miller.—"Electro-magnetic wave-guides." 24919. 21st August, 1946. (617636.)

Marconi's Wireless Telegraph Co., Ltd.—"Electron-discharge devices for use on ultra-high-frequencies." 24972. 22nd August, 1945. (617937.)

R. E. L. Trubert.—"Electrically heated container suitable for washing linen and/or clothes. 25218. 16th August, 1944. (617637.)

British Thomson-Houston Co., Ltd., and W. S. Graff-Baker.—"Means for indicating fault locations on electric transmission lines." 25832. 28th August, 1946. (617794.)

British Thermostat Co., Ltd., and J. E. Sherlock.—"Expansible bellows, assemblies for fluid-pressure-sensitive control devices." 26004. 29th August, 1946. (617638.)

F. C. Tomlins (Western Electric Co., Inc.).—"Arrangements for protecting contacts against sparking. 26180. 30th August, 1946. (617796.)

Akt-Ges. Brown, Bovori & Cie.—"Electrical

transformers with regulating choke coils." 28288. 21st September, 1945. 617642.

Philips Lamps, Ltd.—"Hermetically sealed glass vessels." 28916. 14th April, 1943. (617802.)

Siemens Electric Lamps & Supplies, Ltd., and R. W. Stevens.—"Fittings for tubular electric lamps." 28978. 27th September, 1946. (617643.)

Materiel Electrique S. W.—"Field Regulation of dynamo-electric machines." 29287. 9th October, 1945. (617529.)

Linde Air Products Co.—"Alternating-current arc welding." 29559. 15th November, 1945. (617644.)

J. Stivin.—"High-frequency transformers." 29681. 22nd November, 1943. (617533.)

J. Kerr-Bock.—"Electric fence mechanism." 29729. 5th October, 1946. (617537.)

H. Pain.—"Plug boards for electric statistical machines." 29738. 26th October, 1945. Cognate Application 29739/46. (61739.)

Philips Lamps, Ltd.—"Thermionic valve circuits for generating two alternating voltages whose frequencies are in harmonic relation." 29747. 15th January, 1943. (617541.) "Method of manufacturing electrolytic condensers wherein at least one electrode is coated with an amorphous of oxide. 29749. 27th January, 1943. (617542.)

Pressed Steel Co., Ltd., W. S. Simmie, and E. A. Whittaker.—"Arc welding electrodes." 29821. 7th October, 1946. (617551.)

Kemsley Newspapers, Ltd., A. Reyrolle & Co., Ltd., E. Page and A. T. Robertson.—"Electric motors and their control." 29873. 7th October, 1946. (617563.)

Philips Lamps, Ltd.—"Circuit-arrangements for interrupting electric currents by means of a gas- or vapour-filled discharge tube." 29886. 26th January, 1943. (617566.)

Westinghouse Electric International Co.—"Electrical insulation." 29923. 20th July, 1945. (617645.)

Telegraph Construction and Maintenance Co., Ltd., R. C. Mildner and A. A. W. Barnes.—"Electric Cables." 29926. 7th October, 1946. (617577.)

E. Pass & Co., Ltd. and F. Cooke.—"Clamps for pipes, conduits and the like." 29978. 8th October, 1946. (617588.)

Alni Corporation.—"Electrical motors." 29994. 17th August, 1945. (617646.)

Philips Lamps, Ltd.—"Frequency-changing circuits." 29996. 3rd May, 1943. (617647).

British Thomson-Houston Co., Ltd., D. H. Graham, G. Tabberer and B. E. G. Forsling.—"Apparatus for starting internal-combustion engines." 30031. 8th October, 1946. (617648.)

British Thomson-Houston Co., Ltd.—"Electric circuit-breakers provided with arc extinguishing devices." 30033. 8th October, 1945. (617805.)

Concordia Electric Safety Lamp Co., Ltd., and J. P. Cornish.—"Totally enclosed electrical switches." 30126. 9th October, 1946. (617650.)

British Thomson-Houston Co., Ltd.—"Variable-inductance tuning devices." 30288. 12th October, 1945. (617653.)

British Insulated Callender's Cables, Ltd., E. J. Keefe and L. B. Wilson.—"Method for electric resistance seam welding applicable to the sheaths of electric cables." 30330. 10th October, 1946. (617831.)

British Insulated Callender's Cables, Ltd., Radio Gramophone Development Co., Ltd., and E. T. Court.—"High-frequency coupling devices." 30331. 10th October, 1946. (617654.)

Maple & Co., Ltd., and H. Williams.—"Electric-discharge tubes." 30361. 11th October, 1946. (617832.)

Bullers, Ltd., and G. Perrins.—"Electric insulators." 30364/5. 11th Oct., 1946. (617833/4.)

A. Davies.—"Protection device for three-phase electrical apparatus." 30374. 11th October, 1946. (617657.)

A. G. Crossland and F. M. Cocksedge.—"Electric fires." 30377. 11th October, 1946. (617838.)

General Electric Co., Ltd., and Thompson, W. G.—"Electric rectifying systems, having protective arrangements." 30406. 11th October, 1946. (617840.)

Electromagnets, Ltd., W. E. Box and J. T. Claridge.—"Electro-magnetic separators." 30419. 16th October, 1946. Divided out of 617678. (617680.)

British Thomson-Houston Co., Ltd.—"Electric coil windings, particularly for high-voltage current transformers." 30422. 12th October 1945. (617660.)

General Electric Co., Ltd., and W. Schiff.—"Direct-current electric supply systems having means for absorbing regenerated power." 30558. 14th October, 1946. (617668.)

General Electric Co., Ltd., and A. W. Johnson.—"Electric primary batteries." 30559. 14th October, 1946. (617669.)

Dansk Elektrohegn ved Mogens Plum OG, S. Husted-Andersen.—"Mercury switches for impulse generators for electric fences." 30600. 8th October, 1943. (617672.)

E. K. Cole, Ltd., and A. W. Martin.—"Clock-controlled electric switches." 30620. 15th October, 1946. (617674.)

W. T. Henley's Telegraph Works Co., Ltd., H. A. Macdonald and B. B. Evans.—"Insulated electric conductors." 30676. 15th October, 1946. (617676.)

Electromagnets, Ltd., W. E. Box and J. T. Claridge.—"Electro-magnetic separators." 30735. 16th October, 1946. (617,678.)

Contactum, Ltd., and W. Bollinghaus.—"Snap-action electric switches." 30791. 16th October, 1946. (617686.)

Mond Nickel Co., Ltd.—"Electrodeposition of nickel on nickel." 30849. 25th October, 1945. (617689.)

J. H. Runbaken and G. H. Maugham.—"Electrical soldering irons." 31026. 18th October, 1946. (617696.)

Birlec, Ltd., and E. May.—"Co-axial electrical conductors." 31103. 18th October, 1946. (617699.)

C.A.V., Ltd., W. A. Bevis and E. H. C. Thorpe.—"Electric starting mechanisms for internal-combustion engines." 31183. 21st October, 1946. (617702.)

C.A.V., Ltd., G. T. Robertson and A. J. Oatway.—"Electric welding machines." 31184. 21st October, 1946. (617703.)

Rotax, Ltd., and R. F. G. Hamilton.—"Controlling means for a two-phase alternating electric current servo-motor." 31188. 21st October, 1946. (617704.)

Constructions Electriques J. E. M. Soc. A. R. L. pour l'Exploitation des Procedes J. et M. Jacquet.—"Static transformer for arc welding." 31248. 18th October, 1943. (617706.)

English Electric Co., Ltd., P. L. Mardis and S. A. Smith.—"Electro-pneumatic contactors and switches." 31368 22nd October, 1945. Divided out of 27819/45. (617710).

British Thomson-Houston Co., Ltd.—"Discharge lamp circuits." 31381. 23rd October, 1945. (617711.)

Santon, Ltd., and W. G. S. Owen.—"Electric switches boxes." 31573. 24th October, 1946. (617724.)

Santon, Ltd., and D. Kitcher.—"Thermostatically operated electric switches. 31574. 24th October, 1946. (617725.)

Fibreglass, Ltd., and D. R. Mitchell.—"Electric storage battery plate separators." 31757. 25th October, 1946. (617728.)

D. L. Mordell and J. B. Holliday.—"Gas-turbine power-plant installations." 31795. 25th October, 1946. (617729.)

R. P. H. Hinds.—"Push-pull electric switches." 31899. 28th October, 1946. (617731.)

British Thomson-Houston Co., Ltd., and T. F. Stent.—"Thermostatic electric switches." 32103. 29th October, 1946. (617735.)

British Thomson-Houston Co., Ltd.—"Sockets for tubular discharge lamps." 32104. 31st October, 1945. (617736.)

W. A. Bryce & Co., Ltd., W. A. Bryce and J. A. Atkins.—"Cased transformers, chokes and the like." 32486. 1st November, 1946. (617744.)

British Thomson-Houston Co., Ltd.—"Electric lamp sockets." 32510. 2nd November, 1945. (617745.)

Chloride Electrical Storage Co., Ltd., and R. Gray.—"Battery terminals." 32648. 4th November, 1946. (617753.)

General Electric Co., Ltd., and S. H. Dale.—"Electric motor control systems." 32654. 4th November, 1946. (617754.)

General Electric Co., Ltd., and T. H. Clark.—"Electrical phase shifting networks." 32656. 4th November, 1946. (617755.)

Burgess Battery Co.—"Electric dry cells." 32741. 14th November, 1945. (617756.)

Metropolitan-Vickers Electrical Co., Ltd., G. Shand and T. J. Bletcher.—"Electrical slip-ring assemblies." 32983. 6th November, 1946. (617762.)
6th November, 1946. (617762.)

CONTRACT INFORMATION

ACCEPTED TENDERS AND PROSPECTIVE ELECTRICAL WORK

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Burnley.—21st March. Corporation. Electrical installation in proposed municipal offices. (25th February.)

Clutton.—23rd March. R.D.C. Removal of oil engines, substitution with electric motors, and provision of duplicate sets of pumps and motors at Townsend pumping station, East Harptree. Thomas & Morgan & Partners, 23, Gelliwastad Road, Pontypridd.

Denbighshire.—County Council. Engineers wishing to submit tenders for the installation of electric lighting and inter-communication telephones in Ruthin County Offices extensions should submit their names to the county architect by 14th March. (25th February.)

Edinburgh.—North of Scotland Hydro-Electric Board. 33 kV overhead distribution lines. (See this issue.)

India.—NEW DELHI.—15th April. Public Works Department, Irrigation Branch. Plant for two hydro-electric power stations. (C.R.E. (I.B.) 4923/49. Ten/248.)*

Leeds.—15th March. Transport Committee. Telephone cables and 600 V main feeder cable. (See this issue.)

Newport Pagnell.—15th March. U.D.C. Three vertical spindle electrically driven centrifugal type sewage pumps, with automatic controls. Pick, Everard, Keay & Gimson, 6, Millstone Lane, Leicester.

South Africa.—JOHANNESBURG.—14th April. City Council. Single core 22 kV insulated cable. (C.R.E. (I.B.) 4578. Ten/240.)*

9th June. Railways and Harbours. Supply of 97 overhead electric travelling cranes. (C.R.E. (I.B.) 4929. Ten/244.)*

Whittingham.—14th March. Hospital Management Committee. Electric lamps for one year. W. A. Higgs, secretary of the Management Committee, Whittingham Hospital, near Preston.

* Specifications may be inspected at the Commercial Relations and Exports Department, Thames House North, Millbank, S.W.1.

Orders Placed

Blackpool.—Corporation. Electrical installations in 44 houses forming contract No. 17 on the Grange Park Housing Estate (£1,003).—T. G. Nightingale.

Evesham. — Corporation. Installation of sodium lamp electric street lighting in the High Street.—Revo Electric Co.

Guildford.—Corporation. Electrical installations in 120 houses on the Bellfields Estate (£4,674).—Alfred Appleby & Co.

Middlesbrough.—Corporation. Supply, delivery and erection of an electrostatic detarring plant for the Corporation gasworks (£2,208).—Whessoe, Ltd.

Newcastle-on-Tyne.—Education Committee. Installation of electric wiring and fittings at "The Elms West" (£235).—Wilson & Ridley.

Sedgley.—U.D.C. Installation of electric wiring in 32 houses in course of erection on the Gibbons Hill Site (£737).—D. Moss.

London.—L.C.C. Electrical installation at Halstow Road School, Greenwich.—London Electricity Board (Southern Sub-Area).

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Ayr.—Buildings for storage of manufactured fertilizer to cost £71,000, with £29,000 for plant (electric cranes, etc.); manager, Scottish Agricultural Industries, Ltd., Ayr.

Houses (32) for Town Council (£56,054); burgh surveyor.

Bath.—Houses (72), Stirlingale estate; city surveyor.

Birmingham.—Seven-storey hotel, Hill Street; Mitchells & Butlers, Ltd., Smethwick.

Secondary school, Wake Green, for E.C.; Simister & Marshall, architects, Norwich Union Chambers, Congreve Street.

Bristol.—Partial reinstatement of Colston Hall (£45,000); J. N. Meredith, city architect, Eagle House, Colston Avenue, 1.

Burnley.—Altitude testing plant house, Wood Top Works; Joseph Lucas, Ltd., Gt. King Street, Birmingham.

Burton-on-Trent.—Houses (116), Manners site; Cornes Construction, Ltd., builders, Station Road, Tunstall, Staffs.

Cambridge.—Health centre and gymnasium, Fenners; Council of Cambridge University Senate.

Cardiff.—Milk pasteurization depot, Sanatorium Road; Brittons Dairies, Ltd., 84, Beda Road.

Crematorium, Thornhill (£111,000); city engineer, City Hall.

Cheshire.—Extensions to county grammar school, Hyde; E. M. Parkes, county architect, The Castle, Chester.

Chesterfield.—Block of shops and offices, Knifesmith Gate; G. Bradley, Cavendish House, Cavendish Street.

Derbyshire.—Special residential school, Castle Hill, Bakewell; county architect, St. Mary's Gate, Derby.

Durham.—College of further education, Billingham (£160,000), and mixed and infants' school, East Hetton (£73,600); county architect, Court Lane, Durham.

Eastbourne.—Bakery, dairy, laundry, cooked meat factory, etc., Lottbridge Drove;; Brighton Equitable Co-operative Society, Ltd., 96, London Road, Brighton.

Three-storey offices, Gildredge Road; F. N. Cottrell, N.P.B. Chambers, Terminus Road.

Elland.—Permanent houses (50), Mean Lane site; F. R. Birkhead, U.D.C. surveyor, Council Offices, Elland, Yorks.

Finchley.—Flats (102), Elmshurst estate (£154,546); Matthew James & Co., builders, 24, Violet Road, E.3.

Gosforth (Northumberland).—Pithead baths, Weetslade Colliery, for the National Coal Board; Wimpey & Co., Ltd., builders, Newcastle-on-Tyne.

Hebburn-on-Tyne.—Houses (200) for the U.D.C. Builders: D. Glen, Albert Road, Jarrow (40); Cussins, Ltd., Moor Court, Gosforth (50); G. Bailey, Ltd., King Street, South Shields (50); W. Hall, Ltd., Gateshead (30); and J. M. Black, Ltd., Hebburn (30).

Huddersfield.—Three day nurseries, and extensions to two nurseries (£37,720); H. Nuttall, borough architect, High Street Buildings.

Leigh.—Civic centre and public hall, Pennington Hall site; J. Walmsley, borough surveyor, Town Hall.

London.—LEWISHAM.—Two blocks of flats, Ravensbourne estate (£65,100), for L.C.C.; Gough Cooper & Co., Ltd., builders, Wilmington, Dartford.

ST. PANCRAS.—Flats (114), club, etc., Oakley Square, N.W.1 (£279,128), for T.C.; F. Troy & Co., Ltd., builders, 7, St. James's Street, S.W.1.

KNIGHTSBRIDGE.—Showrooms; Oetzmann & Co., Ltd., Hampstead Road, N.W.1.

CANNING TOWN.—Printing works and offices, Dartmouth Road; Wallis, Gilbert & Partners, 5, Cromwell Road, S.W.7.

Manchester.—Additional storey at ink works, Darley Street, Ardwick, for Ault & Wiborg, Ltd.; Chas. Clarke, builder, 2, Clifford Road, Poynton, near Stockport.

Margate.—Factory, Ramsgate Road Industrial estate; Thanet Industries, Ltd., Westwood Road.

Matlock.—Shops and business premises, The Firs estate, Causeway Lane; J. W. Wildgoose & Sons, Ltd., builders, Industrial Works.

Middlesbrough.—Paint factory for G. A. Willis (Middlesbrough), Ltd.

Primary schools, Park Avenue estate, Saltersgill Farm and the Longlands estate; borough education architect.

Newcastle (Staffs).—Rebuilding Shakespeare Inn, George Street; Bass, Ratcliffe & Gretton, Ltd., Burton-on-Trent.

Newcastle-on-Tyne.—Rebuilding the Stag's Head Hotel, Headlam Street, for Robert Deuchar, Ltd.; Page, Son & Hill, architects, 75, King Street, South Shields.

Nurses' training school, Fleming Memorial Hospital (£5,300); Bowey & Son, builders, Back Raby Street, Newcastle.

Cardio vascular centre at General Hospital (£5,400); E. Jeffcock, Ltd., builders, New Bridge Street, Newcastle-on-Tyne.

Newport (I.o.W.)—Houses (56), Pan estate; E. L. Smith & Son, architects, Melville Chambers, Sandown, I.o.W.

Northumberland.—Primary school, Longbenton; Connell & Son, quantity surveyors, 25, New Bridge Street, Newcastle-on-Tyne.

Norwich.—Shops and warehouse, Magdalen Street; Loynes & Son, 38, St. Benedict's Street.

Ormskirk.—Junior and infants' school, Greetby Hill; J. Lucas & Sons (Builders), Ltd., Eccleston Street, Prescot, near Liverpool.

Plymouth.—Houses (43), Warleigh Avenue, Keyham; Saunders & Reiss-Smith, architects, 70, Hill Park Crescent.

Preston.—Infants' and junior school, Windle, for Lancashire Education Committee: G. Grenfell Baines, architect, 12, Guildhall Street, Preston.

St. Albans.—Primary school; Leonard E. Ellis, architect, 21, Gainsborough Avenue.

Salford.—High school for girls, Kersal Farm site; Bradshaw, Gass & Hope, architects, 19, Silverwell Street, Bolton.

Houses (198), Manchester Road, Worsley; Thorpe & Smith, architects, 66, Deansgate, Manchester, 3.

Salop.—Modern high school, Shrewsbury, Monkmoor; A. G. Chant, county architect, 5, Belmont.

Sheffield.—Factory and offices, Solly Street; Kirkham & Co., Ltd., 218, Holly Street.

Southam.—Houses (38) for R.D.C.; Quick & Lee, architects, 11, Waterloo Place, Leamington Spa.

South Shields.—Houses for T.C.; R. Brown & Son, builders, Lord Street, South Shields (50 houses), and Henderson Bros., Tyne Dock, South Shields (34).

Southwell.—Houses (60), Gunthorpe, Oxton, and Sutton-on-Trent; S. Cooper, R.D.C. surveyor, 8, Westgate, Southwell, Notts.

Stockton-on-Tees.—Factory additions, Commercial Street, for A. Kennedy & Co.; F. W. Turnbull, architect, White House, Carlton.

Houses (146), Durham Road estate; Lane, Fox & Co., Ltd., builders, Norton, Stockton-on-Tees.

Stourbridge.—Houses (148), Norton estate; borough engineer.

Sunderland.—Houses for T.C.. Builders: T. Stewart (24 houses); C. Harrison (6); G. H. Plemper, Ltd. (12); G. Bell, Ltd. (12); Cowell & Rawling (6); T. D. Gibbons & Son, Ltd. (24); and Stewart Brothers (12). All Sunderland firms.

Walsall.—Factory, Croxtall Avenue; Hancox & Plimmer, 73a, Station Street, Bloxwich.

Watford.—Factory, Federal Way; B. Walker & Son, Ltd., 1, Gammons Lane.

Wembley.—Block of two-storey flats, Bridgwater Road, and 16 maisonettes, Mall estate; borough engineer.

West Bromwich.—Primary school, Hateley Heath estate; H. Schofield, borough surveyor, Town Hall.

Wigan.—Houses (135), Norley Hall estate (£175,926); D. M. McKellen, borough engineer, Library Street.

Worthing.—Houses (106), Maybridge estate; borough engineer.

Shops and showrooms, Bath Place; J. K. Hubbard, Ltd., 22, Lansdowne Road.

Wymondham.—Catholic memorial church (£15,000); Rev. Malcolm Cowin, The Presbytery, Norwich Road.

Institute of Metals

THE Council of the Institute of Metals has appointed a new standing committee, the Metallurgical Engineering Committee, under the chairmanship of Mr. D. F. Campbell, the objects of which are *inter alia*, the development of interest in metallurgical engineering in the non-ferrous metal industry and the promotion of study of equipment and instruments used in the industrial melting, casting and working of non-ferrous material.